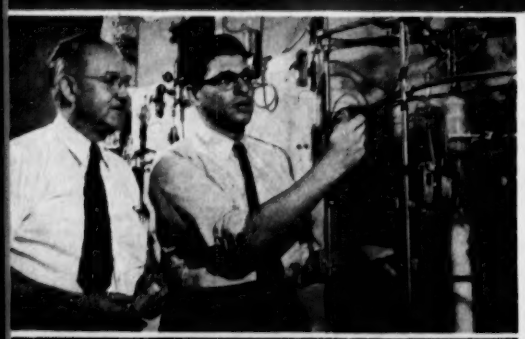
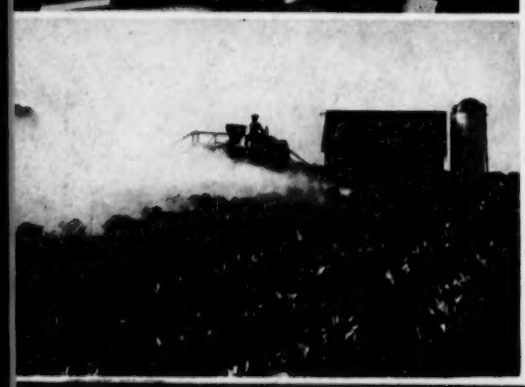
# Chemical Week





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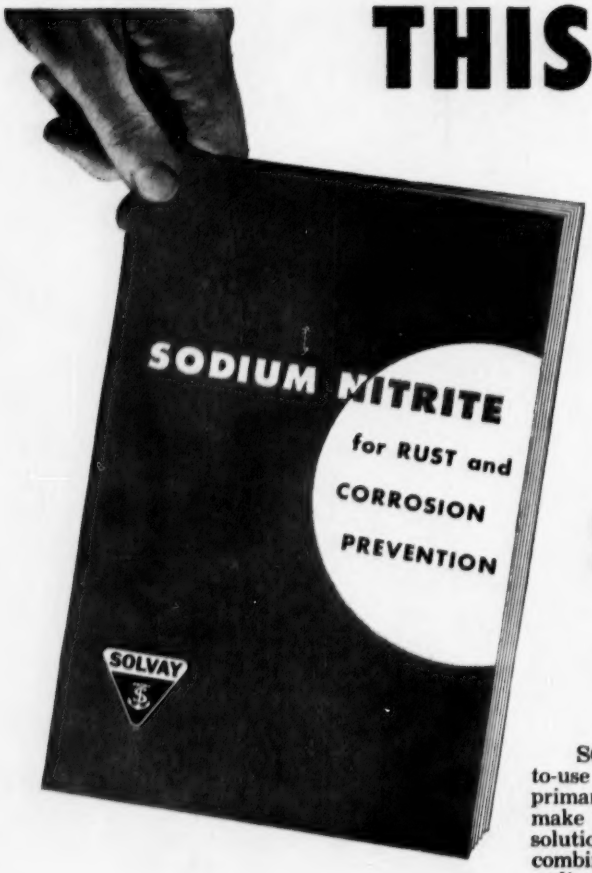


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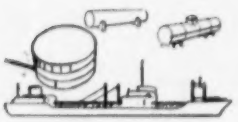

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**November 5, 1955**
*Vol. 77, No. 19*

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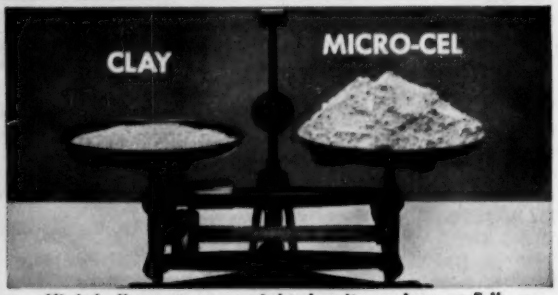
**Absorbs up to 6 times its weight in water**—Micro-Cel remains a free-flowing powder even after absorbing more than twice its own weight of liquid.




**High bulk . . . loose weight density as low as 5 lb. per cu. ft.**—Micro-Cel "fluffs up" any compound with a minimum addition.

## Johns-Manville MICRO

# calcium silicates developed by Johns-Manville Research

# MICRO-CEL...

**Check its different combination of properties . . . it may hold the key to lower costs and product improvements in your process formulations.**

Johns-Manville's new Micro-Cel line can produce many desirable effects as the following examples illustrate.

**Absorption of Liquids**—Micro-Cel will absorb 1 to 2½ times its weight of liquids and still remain a free-flowing powder.

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**Viscosity Control**—Various degrees of viscosity up to a paste or semi-solid can be achieved by adding relatively small quantities of Micro-Cel.

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**Pigment Extender**—Micro-Cel's surface characteristics, fine particle size and large specific surface, combined with inertness, indicate its value as a pigment extender.

**Suspension Agent**—Micro-Cel's different combination of properties provides aid in suspension of heavier solids.

**Flatting Agent**—Micro-Cel's high absorption, fineness and particle shape indicate its value as a flatting agent.

**Reinforcing Pigment**—The combination of fine particle size, particle shape, and wetting characteristics suggests the value of Micro-Cel as a reinforcing pigment.

### Some Proven Uses

Micro-Cel has already been proven as offering outstanding advantages as an absorbent-grinding aid for high liquid concentrate insecticide wettable powders, as an anti-caking agent in fertilizers, insecticide dusts, cleansers and detergents. Additional uses are being explored in Johns-Manville's Research Center.

### Chemical Composition

Developed after years of research and experimentation by Johns-Manville, Micro-Cel is produced by the chemical combination of lime and diatomaceous silica under carefully controlled conditions. As a result, specific grades are available offering a wide range of physical properties.

**RANGE OF PHYSICAL PROPERTIES**

| | |
|---|---|
| Color | white or off-white |
| *Absorption, % by weight | |
| Water | 300-600 |
| Oil | 275-500 |
| Bulk density, lb./cu. ft. | 5-15 |
| Ultimate particle size, micron | .02 to .07 |
| pH | 8.0-10.0 |
| Moisture (free), wt., % | 5-8 |
| Refractive index | 1.52-1.55 |
| Available surface area, sq.m./gm. | 95-175 |

*Will absorb 1 to 2½ times its weight in liquid and remain a free-flowing powder.

### Samples Now Available

Micro-Cel is now available for laboratory and production evaluation. Write to Johns-Manville for further data on your specific problems. An engineer from J-M's Celite division will be glad to work with you in adapting Micro-Cel to your own particular requirements. Mail coupon today.

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OVERHEARD ON A PLANT INSPECTION TOUR

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Harvey is neither buyer nor seller of production equipment. He's just *interested*. Maybe shop men explain things to him differently because he hasn't got an ax to grind. Or maybe he *hears* things differently because his mind isn't cluttered with product details.

Anyway, he told us about a Simpson Mix-Muller installation he had seen on a recent plant tour: "The Plant Engineer was *crazy* about bottom discharge" he said, adding that his shop friend had explained: "The new Mix-Muller takes up less space, discharges faster and with less 'commotion' than the unit it replaced—because you just open the door and the plows do the work."

You know, the Simpson Mix-Muller has been equipped with bottom discharge for 40 years. It's the only muller where the plows and muller do the work while the heavy crib *and* the pay load remain stationary. It's so basic a fact with us that we think we let Harvey's production friend take it for granted!

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# OPINION . . .

## Salary Brackets

TO THE EDITOR: Re your news article on countering the "Better Salary Offer," I feel that the attitudes expressed by the noble gentlemen you quote is closely related to the shortage of technical manpower. As long as they insist upon incentive-stifling "brackets," we will continue to turn many good potential scientists elsewhere.

The salesman who takes the million-dollar order is given the kind of praise that buys groceries (or, better, yachts). Is the chemist who develops the million-dollar product given the same consideration? More than likely the best he can expect is another "bracket" . . .

R. F. CONNELLY
Research Chemist
Bray Oil Co.
Los Angeles

## Pure as Cane

TO THE EDITOR: The brief item, "Sugar Research in India" (*July 30, p. 26*)—which mentions a development of the National Chemical Laboratory involving "the exploitation of bagasse through hydrochloric acid hydrolysis"—is not well-phrased and therefore misleading. You say, for instance, that India's sugar factories are left with 4.5 million tons of bagasse each year—while only producing 1.5 million tons of sugar cane.

Bagasse is derived from sugar cane, hence the quantity of it cannot be three times that of the whole. Probably what is meant:

| | |
|---|---|
| Cane sugar production | 1.5 million tons (not sugar cane) |
| At 9 tons cane per ton sugar | 13.5 million tons |
| Bagasse 33% on cane | 4.5 million tons |

Most of the latter, probably 90%, would be burnt in the furnaces for steam production unless substitute fuel

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

(wood, coal, etc.) is used, so the factories may not be "left with" 4.5 million tons bagasse. . .

Nonetheless, I must congratulate you on the wealth of information you manage to pack into each of your numbers . . . Perhaps sometime you might consider running a feature on sugar. The greater part of the 40 million-odd tons consumed each year reaches the user as 99.9% chemically pure sucrose. Does any chemical industry operate at this quality level for such a quantity?

J. G. DAVIES
Superintendent of Fabrication
New Yarmouth Ltd.
Jamaica, B. W. I.

## Rare Chemicals

TO THE EDITOR: Your news article on the rare chemicals business (*Oct. 22, p. 100*) was a job well done.

The ramifications of this "roller-coaster" operation provide little time for reappraisal—much less thoughtful judgment. It's a pleasure to read that someone makes sense out of so much that defies definition.

STUART J. CANTER
Director
Chemicals Procurement Co.
New York

# DATES AHEAD . . .

**National Wholesale Drug Assn.,** Greenbrier, White Sulphur Springs, W. Va., Nov. 5-9.

**American Council of Independent Laboratories,** annual meeting, Westward Ho Hotel, Phoenix, Nov. 8-11.

**Commercial Chemical Development Assn.,** joint meeting with CMRA, Carter Hotel, Cleveland, Nov. 14-15.

**National Foreign Trade Council,** annual foreign trade convention, Waldorf-Astoria Hotel, New York, Nov. 14-16.

**American Petroleum Institute,** annual meeting, St. Francis, Fairmount, Palace and Mark Hopkins Hotels, San Francisco, Nov. 14-17.

**American Mining Congress Coal Division,** conference, William Penn Hotel, Pittsburgh, Nov. 17-18.

**Manufacturing Chemists' Assn.,** semi-annual meeting, Statler Hotel, New York, Nov. 22.

**American Institute of Chemical Engineers,** annual meeting, Statler Hotel, Detroit, Nov. 27-30.

**International Atomic Exposition,** Public Auditorium, Cleveland, Dec. 12-16.


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# Business Newsletter

CHEMICAL WEEK
NOVEMBER 5, 1955

**Brawls seem to be brewing** this week on at least two fronts involving chemical processing firms. And while chemical executives probably won't get involved directly, they're sure to be watching developments from close-to-ringside seats.

**Bone of contention in Washington** is a Defense Dept. plan to shut down 14 government-operated industrial production units (including paint plants at Norfolk, Va., and Mare Island, Calif.).

The House Appropriations Committee says it "expects and requests that all action in this connection" be held in abeyance until Congress reconvenes in January; the Defense Dept. (applauded by private paint producers) insists it is acting entirely within its constitutional rights.

**On the national front:** The fluoridation fracas is flaring up again. In St. Louis, a public hearing on a measure to repeal fluoridation ended in an uproar last week; in Milwaukee, a similar proposal to end fluoridation of the city's water supply was postponed, to give proponents a chance to prepare adequate testimony.

Farther south, in Lynchburg, Va., repeal went to a vote—was beaten down after a noisy public battle. And in Toledo, O., city officials disclose that "unavailability of a suitable chemical" has resulted in the indefinite postponement of its fluoridation program.

•

**What could sound a retreat** for a number of other chemical firms is word from St. Louis that Monsanto Chemical Co. is quietly pulling out of the nuclear power business. Last year, Dow tossed in the towel, withdrew from an atomic power study group headed by Detroit Edison.

Reason in both cases seems to be that executives finally came to realize that they were overmatched in attempting to compete with such firms as Westinghouse, General Electric, and Babcock & Wilcox—all with long experience in working with utility companies.

Monsanto, however, will continue—at least for the present—to study applications of radiation to certain chemical reactions.

•

**Still in the realm of speculation** is a plan whereby Scott Paper Co. would establish a $35-million pulp mill in the Canso Strait area of Nova Scotia. If built, the plant would have a capacity of 300 tons/day of paper.

•

**More definite is Firestone Tire & Rubber Co.'s** latest expansion move. The company, at latest count, has obtained options on two tracts—one in Lake Charles, La., the other at Orange, Tex.

On the planning boards (and ticketed for one of the two sites) is a $30-million plant to be integrated into Firestone's synthetic rubber producing operations.

• •

**Kaiser Aluminum & Chemical Corp.** is in a spending mood, too, will put $1.25 million behind expansion of its Trentwood, Wash., rolling mill. Output, company officials say, is slated mainly for the aircraft industry.

## Business Newsletter

(Continued)

**And at Calvert City, Ky.,** Pennsalt will build an organic fluorine chemicals plant, due onstream sometime late in 1956.

•

**Negotiations are under way this week between** Stanolind Oil & Gas Co. and Base Metals Mining Corp., Ltd., on a Jamaican oil exploration concession. A "conditional agreement" has been reached, according to Stanolind, whereby it will spend at least $2 million in exploration of Base Metals' concession before June, 1958. Base Metals (if the deal goes through) would retain 25% interest in the concession, and would receive, in addition, an undisclosed sum of cash.

•

**If all goes according to present indications,** Canada's uranium output will top $180 million in 1958. But the scramble's on in earnest this week to beat the weather and qualify for a Canadian government uranium contract.

Last July, Ottawa demanded that all companies seeking a contract at premium prices negotiate that contract by March 31, 1956, also required that all successful negotiators start production by March 31, 1957.

Numbers of firms have yet to qualify on both scores; hence the feverish activity in the midst of the winter's first snowfall.

•

**Canadian Gulf Oil Co.** plans to build a 225-tons/day sulfur plant at Pincher Creek, 50 miles southwest of Lethbridge in Alberta. Construction starts immediately; when completed, next September, the plant will be the largest sulfur-producing unit in Canada.

According to Canadian Gulf—a subsidiary of Gulf Oil Corp.—a contract has already been signed with Northwest Nitro-Chemicals, Ltd., calling for purchase of the major share of the plant's initial output.

•

**West End Chemical Co. has turned up** lime rock deposits in the Argus Range, Inyo County, Calif. Company officials are currently considering transferral of present quarry operations to the new site, are also contemplating installation of a rotary lime kiln using natural gas as its fuel.

•

**More intensive development** of hydroelectric power is the No. 1 industrial necessity in the Pacific Northwest today, chemical executives are claiming. No new starts have been made on hydroelectric projects in the past four years, and dams now under construction will provide barely enough power by 1960 to supply normal domestic, commercial, and light-manufacturing users of electricity.

In the light of such conditions, chemical makers are steering away, whenever possible, from investment in new construction in the area.

•

**Determined to fight fines ranging from $3,000 to $5,000** for alleged violation of the Sherman Antitrust Act in connection with sale of salt from Great Salt Lake, the four defendants (Morton, Royal Crystal, Deseret Livestock, Deseret Salt Co.) have filed appeal notices with the U.S. Circuit Court of Appeals in Denver. Outlook: little chance of repeal of sentences.

**QUESTION**

# Is there a practical low-cost method for applying high molecular weight PVC top coatings?

**ANSWER**

# *Use Du Pont Tetrahydrofuran as solvent...*

**This powerful solvent** has an unusually high solvent action for the high molecular weight polyvinyl chlorides. Now, with THF as the active solvent, these hard-to-dissolve vinyl polymers can be considered and used as "solution resins" to produce improved top coatings for supported fabrics and plastic sheeting, more durable protective coatings, and stronger films.

Improved product quality can be obtained at low, economical cost because:

- **THF solution of high molecular weight PVC can be carried out at room temperatures, to give solutions of high solids content at practical working viscosities.**
- **THF can be used by itself or as an improver for less active solvents.**
- **Solvent recovery requires only standard equipment.**
- **Rapid solvent action and high volatility of THF frequently permit higher machine speeds, increased output of first-quality coatings and films.**

Prompt shipments of Du Pont tetrahydrofuran can be made in tank cars or drums. For more information and technical assistance in its application, just call or write your nearest Du Pont office or mail the coupon below.

## PHYSICAL PROPERTIES

| | |
|---|---|
| Appearance | Colorless, mobile liquid |
| Odor | Ether-like |
| Molecular weight | 72.10 |
| Freezing point | -108.52°C. |
| Boiling range | 65°-67°C. |
| Flash point (Tag closed cup) | 6°F. |
| Vapor pressure, mm Hg. at: | |
| 25°C. | 176 |
| 45°C. | 385 |
| 65°C. | 760 |
| Solubility | Miscible with water. Soluble in most organic solvents. |

• • • •

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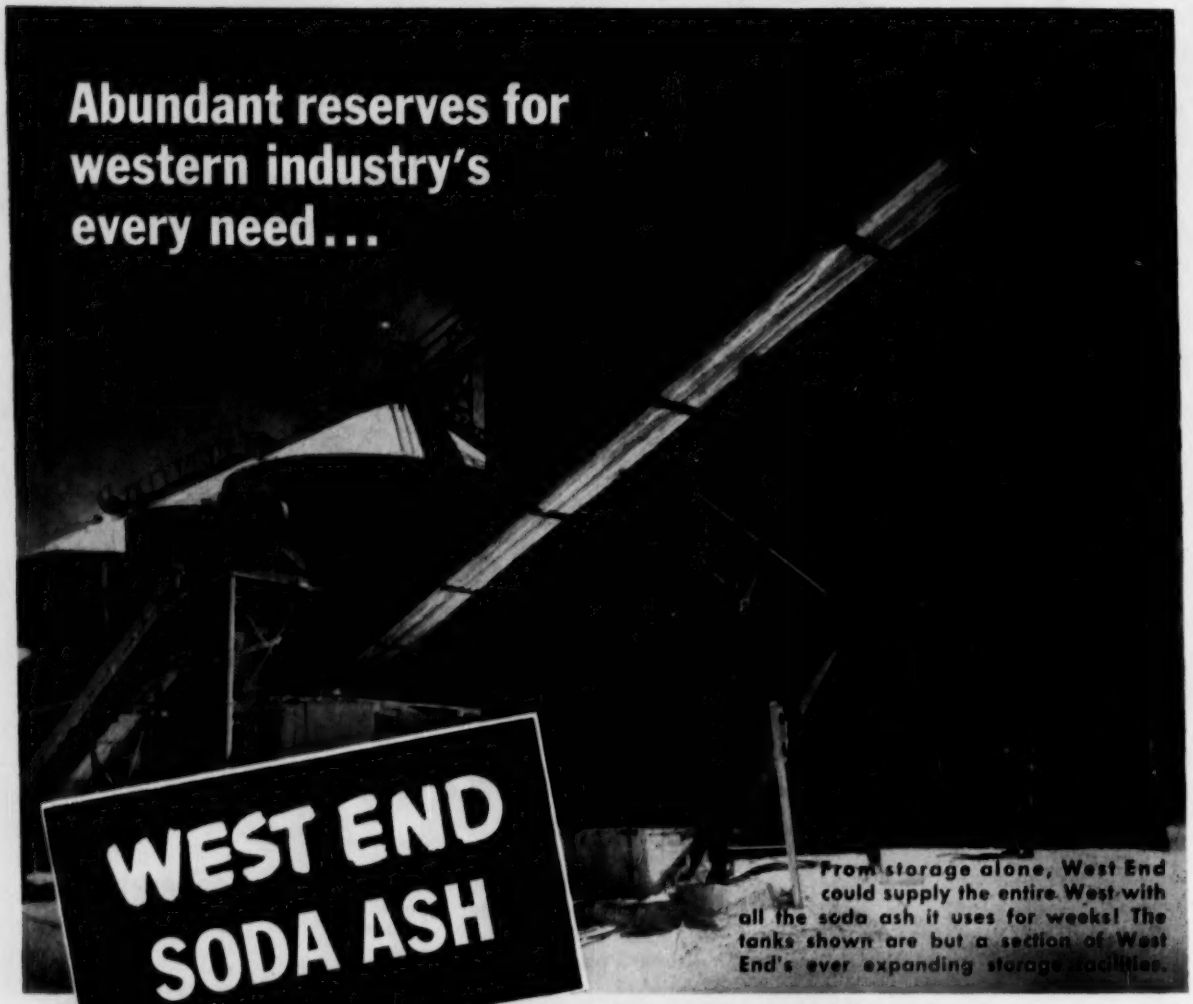
# Abundant reserves for western industry's every need...



## WEST END SODA ASH

From storage alone, West End could supply the entire West with all the soda ash it uses for weeks! The tanks shown are but a section of West End's ever expanding storage facilities.

For 30 years, West End has been constantly enlarging its manufacturing and storage facilities. Regardless of market conditions, normal and emergency needs of customers are served promptly and completely. Fast, economical transport by rail or truck to any point in the West.

*Write for samples, prices and technical data.*

**PERSONAL SERVICE** — Customers anywhere in the West are only a few hours away by company plane.

**IMMEDIATE SHIPMENT** to customers throughout the West in company's own leased hopper cars . . . ready at all times.

**30 MINUTE IN-AND-OUT LOADING** for bulk trucks at any hour of day or night through "serve yourself" delivery.

WEST END CHEMICAL COMPANY

SODA ASH • BORAX • SODIUM SULFATE
SALT CAKE • HYDRATED LIME

## West End Chemical Co.

Executive Offices: Nineteen Fifty-Six Webster Bldg., Oakland 12, California · Plant: Westend, California

November 5, 1955 • Volume 77 • Number 19

Chemical Week

# BUSINESS & INDUSTRY. . . .

**ANNUAL EVENT: Even a normally sleepy Troy Station comes alive for . . .**

## A Bow to Educators

**Ten times every second someone enters a drugstore in the United States to get a prescription filled. That fact is evidence enough of the pharmaceutical industry's importance to the health and welfare of the nation.**

But—650 teachers and educational leaders* were told at a weekend forum meeting of the Industrial Council at Rensselaer Polytechnic Institute—the public at large is often unaware of its stake in the pharmaceutical industry. On subjects such as the growing shortage of technical manpower ("the only serious drag on drug research") and the cost of drugs ("the most serious threat to the practice of medicine today"), a big segment of the public is grossly uninformed or misinformed.

Result is growing antipathy between consumers and the industry.

Even the size and importance of the pharmaceutical industry today is blurred in the minds of most Americans, its leading executives claim. Last year drug-producing firms (numbering over 500) employed some 90,000 men and women, turned out medical preparations with a total sales value (at a consumer level) of more than $1 billion.

**What to Do?** What to do about the lack of public understanding is a problem drugmakers cannot resolve alone.

They need, they say, the help of teachers, "not only to furnish them with significant clues as to the attitudes of students and their parents toward the industry, but also as opinion-molders—to correct misinformation and relay the objectives of pharmaceutical producers to the people."

Of even more immediate concern: teachers may be the only means that industry can count on to "avert a real crisis in the continued industrial development of the United States."

"We may run out of trained manpower and brainpower," said one speaker at the three-day Industrial Council - sponsored meeting, "and much sooner than we run out of oil or iron reserves."

**Hammering It In:** To an audience obviously impressed with the sincerity of his plea, RPI's President Livingston Houston drove hard on the importance of the impending manpower shortage on everyone—teachers as well as the pharmaceutical industry.

Industry 75 years ago used one engineer for each 400 employees, he pointed out. Today, the demand is one engineer for each 40 employees. In the light of a "reported decreasing interest" among high school students for advanced study in technology, and the accompanying decrease in trained teachers in the field, the imbalance is coming to a critical stage.

Industrialists can strain to cut production costs; they can invest large sums of money in research; but they can't beat the manpower problem.

To make any dent in the shortage, they need the help of educators—"who rub shoulders every day with the heart of the American public."

**Doors Will Open:** Given proper support, however, pharmaceutical firms will continue to gain mastery over human ills.

There is much still to be done, admits Winthrop-Stearns' president, Theodore Klumpp. There are still bacteria that haven't been mastered, and it is likely that the appearance of new mutants will keep pharmaceutical researchers in business for a long time. Although the conquest of polio now appears in sight, there is still a host of virus diseases as yet untouched.

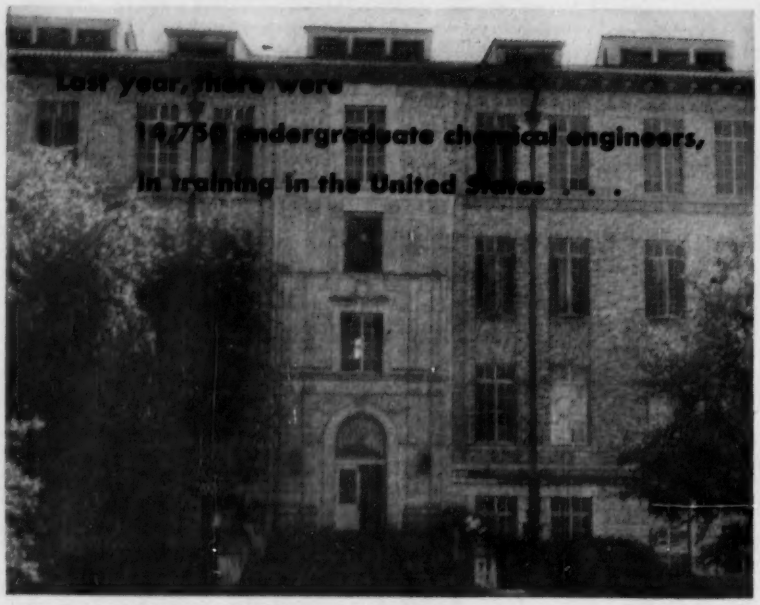
Cancer is still a mystery: and although "we have a good palliative" for diabetes, medical experts still don't understand its pathogenesis. Many endocrine, mental and neurological disturbances defy cure; and arteriosclerosis is still beyond the grasp of researchers.

This formidable list of "yet-to-be-conquered" is a challenge, not only to pharmaceutical companies, but also to the country as a whole.

But with the knowledgeable, understanding aid of the nation's teachers, all this—"and more"—is possible.

"From a gathering such as this—between industrialists and educators," one executive was overheard to say, "great good is gained on both sides."

* From secondary schools in all 48 states.




**UNIV. OF TEXAS: With others, it has higher ChE enrollments but . . .**

# Gains Aren't Sufficient

**Industry efforts to ease long-range technical manpower shortages of chemists and chemical engineers are falling far short of the mark. For although college enrollment is slowly inching upward, its rate of increase is far from adequate now to satisfy the industry's future manpower requirements.**

Spotlighting the manpower dilemma: a recent *CW* survey conducted among key technical colleges shows enrollment increases are still on the plus side, but far from where chemical management would like to see them.

For example, surveyed colleges show only a 9.4%/year increase in number of enrolled chemical engineering majors in 1955, whereas in 1954 the same schools reported an average hike of 16.9%.

Chemistry major quotas fared no better, increased only 8.4% over last year in number.

Projected on a nationwide scale, these enrollment increases mean a total enrollment this year of only something like 16,000 chemical engineering and 46,000 chemistry majors—a far cry from the hosts of technical tyros the chemical industry should have in training right now to fill its future expansion bills.

**Forces At Work:** Perhaps the only major force now at work urging chemistry/chemical engineering enrollments forward is the age-old principle of supply and demand*. For, as long as the supply of technically trained personnel remains short, chemical executives will proffer flashy starting salary figures to potential job candidates. And knowing this, some undergraduates will be swayed to elect chemistry as a major course of study.

Other positive attacks against declining enrollments could ostensibly boost technical enrollment somewhat. Most recent of these is the newly announced National Merit Scholarship plan (sponsored by the Ford Foundation and Carnegie Corp.). This plan seeks to underwrite college educations for worthy high school students who ordinarily might not go to college.

Another positive factor designed to swell the number of technical students in colleges: some chemical companies are setting aside grants to foster chemistry teaching in both high schools and colleges.

**As to Companies:** But no one, with surety, is betting on an early easing of the manpower situation.

That's one important reason why many chemical companies — even though they may have an eye on the long-term future—are really focusing their attention on the present.

A lot of emphasis is being put on today's strategy to solve today's problems. And "get-the-man" tactics are taking many forms. Among the prevalent and popular:

- Top-level personnel men are being dispatched to college campuses early—very early. ("Get there first.")
- More and more firms are offering undergraduates handsome summer jobs. They find that early company introduction often results in favorable nods from the men when they graduate.
- Some firms are hiring high school science teachers during summer recesses. That has a double advantage: it helps relieve the manpower strain temporarily and rubs off teacher industry-enthusiasm on high school pupils.
- Other chemical outfits are actually sending manpower hunting teams abroad in attempts to fill the gaps with foreign-born technologists. In general, however, this line of attack has not proved successful.

**Trend Reversing?** Actually, the *CW* survey shows, college enrollments are beginning to move in the right direction as far as chemistry and chemical engineering studies are concerned. Other signs point to hikes in numbers of graduates (at all levels) in the two fields. True, these increases are small. But they signify that chemical industry forces at work are actually beginning to produce the desired results in the manpower battle. To keep the trend moving forcibly forward, chemical companies will have to multiply their efforts to induce new followers to enter chemistry.

* Ratio of potential employers to technical job seekers is running about 3:1.

**In seven typical universities this year total chemical engineering enrollments are up 9.4% over 1954 . . . chemistry enrollments at the same schools are up only 8.4%.**

## LATEST IN LIABILITY

(Current product liability lawsuits involving chemical products)

| Case | Product | Where Used | Alleged Injuries | Demand for Damages |
|---|---|---|---|---|
| Phillips vs. Oldbury | Sodium chlorate, used as a herbicide | On employer's farm | Burns on head, limbs and body | $1 million |
| Tarr vs. Procter & Gamble | Home permanent kit for children | At home | Illness, disfigurement, pain and mental suffering | $100,000 plus $10,000 for medical expenses |
| Van Milligan vs. Curtis | Cold wave lotion | At beauty parlor | Nearly total baldness | $50,000 from manufacturer and $50,000 from beauty parlor operator |

**HIGH AT THE START: In pending cases, defendant chemical process companies seek to whittle down . . .**

# Costly 'Asking Prices'

**You get so that you don't scare easily when you've had experience with product liability suits, even though the long-range trend is toward an increase in the number of liberal settlements awarded to consumers who file such suits.**

That it frequently pays to sit tight and let customer-claimants fight it out in court is borne out this week in developments in principal product liability suits pending in New York and Chicago (*see table, above*). It seems that each complaint of this kind looks pretty formidable when it's first filed, but fairly often these cases wind up as harmless as a discarded jack-o'-lantern the day after Halloween.

One example: The weedkiller case in Chicago, in which Floyd Blanski asserted that his muscular coordination was badly damaged back in 1949 when—as an employee of Davey Tree Export Co.—he used some of Shell Chemical's weedkiller 130 (containing pentachlorophenol supplied by Dow and Monsanto). Blanski sued for $500,000; but the case was put off time and again over the past two years, finally (last fortnight) was thrown out of court "for want of prosecution."

**Defeat and Deflation:** You can't expect every product liability suit to evaporate so completely, but it's a rare case that doesn't undergo some devaluation. The rule is: if you can't defeat the plaintiff's claims, at least deflate them.

Both of these tactics are being used by lawyers for Oldbury Electro-Chemical in the sodium chlorate suit in New York. This is the suit in which Dewey Phillips and his son, Jack, of McClure, Ill., are taking the position that sodium chlorate by itself is too dangerous to be marketed as a weedkiller, and that Oldbury should be held responsible for having put such a product on the market (*CW, Aug. 13, p. 15*).

To begin with, Oldbury is denying any negligence in making and distributing the product, thus leaving it up to Phillips to try to prove this charge. Second, Oldbury contends that the suit is barred by the statute of limitations, which requires that legal action be started within two years after the alleged injury. And—maneuvering to gain the initiative—the company is asking for detailed answers to 29 pointed questions about the 1953 incident. This interrogatory is aimed at getting information that might clear Oldbury altogether or at least cause shrinkage in the damages demanded. Examples of these queries: State the directions given to Phillips for use of the chemical; and describe how he used it.

**Hair Wave Cases:** Two other cases now pending relate to injuries allegedly caused by hair-waving products. A New York man says that his daughter (under the age of 14) was disabled and her appearance marred by thioglycolic acid in a home permanent kit for children; and an Illinois woman states that a cold wave treatment caused her to lose her "abundant and luxurious growth of hair" and become almost totally bald.

Both companies are denying that they are liable in those two cases, and indicate that they won't be stampeded into offering out-of-court settlements. Lawsuits of this kind are fairly common, but are often dropped before coming to trial. Manufacturers of hair preparations say that frequently the person who files such a claim has a chronic scalp disease that would account for disfigurement or loss of hair.

HERMAN PHOTO, CLEVELAND

**PROFESSOR WALSH: On further automation in chemicals, no alarmist.**

## Cause for Complacency

**It's a hot issue in some industries, but automation isn't giving chemical people either ulcers or an argumentative outlook.**

The Congressional committee that will be reflecting from this week until January on what—if anything—Congress should do to keep automation from disrupting the national economy has been assured there's no need to worry about what this factory phenomenon will do to the chemical industry.

Professor Thomas Walsh, of Cleveland's Case Institute of Technology—reporting on his school's two-year study of automatic control usage in this and other industries—states that:

- Further automation of currently used large-scale chemical processes is unlikely, because it would add only 1 or 2% to the efficiency of such processes.
- Present use of automatic controls has already put the chemical and petroleum industries past the point at which serious displacement of production workers might be expected; and more automation will bring an expansion of job opportunities.

**Already 'Automated':** These were high points of Walsh's testimony in Washington during the recent two-week hearing by Rep. Wright Patman's subcommittee of the Joint Committee on the Economic Report. He emphasized that equipment operators in large chemical plants are already "very effective and very efficient," and that his study group had "very little to offer" in the way of improved methods.

"But I think we have an advantage on some materials," he added. He cited the Wulff process of making acetylene from natural gas as one that might be enhanced by automation. Optimum time of reaction in that process is 1.3 seconds, he explained, and development of a "thinking" machine or control device that would function in thousandths of a second might be the only way to assure good yields.

As was the case during the first week of the hearing (*CW, Oct. 29, p. 16*), there was sharp controversy over what to expect from automation. A CIO union official said automation has been cutting the number of telephone industry jobs by 1.6%/year, and that Congress should be ready to act. A spokesman for the National Assn. of Manufacturers said there's nothing to fear in automation if unions don't try to corner the benefits and if "artificial restraints" are not imposed. General Electric Co. President Ralph Cordiner said automation would create new employment, increase the nation's wealth and purchasing power.

## EXPANSION

**Cellular Glass:** The Pittsburgh Corning Corp. will expand production of cellular glass insulation by 50% at its Port Allegany, Pa., plant.

Additional melting and processing equipment is due to be installed at a cost of over $1 million.

•

**Ammonia:** St. Paul Ammonia Products, Inc., will build a $16-million anhydrous ammonia plant outside St. Paul, Minn. Rated capacity of the plant will be 200 tons/day; completion is scheduled for late 1956.

Financing arrangements have been negotiated privately—through White, Weld & Co.

•

**Newsprint:** Construction of a $32.5-million expansion at Coosa River Newsprint Co.'s plant near Childersburg, Ala., starts immediately. Completion is set for early 1958; when in operation, the mill will have a total output of 300,000 tons of newsprint annually.

•

**Vinyl Chloride Paste Resin:** Monsanto Chemical Co.'s Plastic Division plans to triple vinyl paste resin capacity

## Under the Microscope

PICKING UP where he left off last summer, Rep. Emanuel Celler (D., N.Y.) opened up a new round of WOC conflict-of-interest hearings last week. Called up on the carpet first: John C. Clay (*right*), assistant to the executive vice-president of National Starch Products, Inc. (Clay served without pay in the Korean War National Production Authority and other Commerce Dept. agencies from May '52, to June '53.)

For Clay, the hearing meant a microscopic examination, under oath, of expense vouchers and all correspondence with National Starch during his period of government service. What Celler especially wanted to find out: whether National Starch got "favorable treatment" (e.g., on a fast tax write-off) for the $2,300 in "entertainment expenses" it paid for Clay during the 14-month period in question.

Replied Clay in defense of his expenses: "In most cases these . . . helped me do a better job for the government . . . could only incidentally benefit my company."

## Washington Angles »

**That threatened Federal Trade Commission** antibiotic price probe may be a long time coming. FTC likely won't get started on it before next March, and makers may not get detailed data requests until several months later.

**More testing of synthetic lubricants** is in the works. The Armed Services Procurement Agency is inviting four companies to supply 1,045 gal. each to the Dayton Air Development Center. Synthetic lubricants to date are used primarily for jet engines; most are diester compounds. Esso Standard Oil Co., Texas Co., Rohm & Haas Co., and American Oil and Supply Co. received the invitations.

**Companies that got less** than full cost allowance in fast tax write-offs on defense facilities built during World War II may collect refunds from the government. The Supreme Court has, in effect, upheld the claim that the War Production Board had no authority to allow only partial amortization. Some 40 companies with claims totaling more than $62 million are directly affected; others may be. And at least one major chemical company, not yet identified, is among claimants now before the Internal Revenue Service.

**New pressure for tougher drug laws** will come from last week's mass arrest of amphetamine sellers. But the Food & Drug Administration wasn't seeking any such result. The arrests were timed to coincide with the agency's hearing before the Budget Bureau last Monday to underscore increased fund requests for fiscal 1957.

**Increased effort** to eliminate job discrimination on government contract work is anticipated throughout industry. Eisenhower Administration officials believe the briefing they gave company executives on their drive to wipe out prejudice against hiring and promoting Negroes will pay off. Why? Industrialists who were reluctant to push a nondiscrimination program because of possible dissension among workers now know it isn't as risky as they had thought.

**Chemical futures** . . . first semiannual antitrust report on butadiene, styrene and synthetic rubber industry is due Nov. 9 . . . preliminary summary of industrial research data from National Science Foundation study will be published about Nov. 15.

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at Springfield, Mass. Construction of new facilities starts immediately, is expected to be completed sometime in the second quarter of 1956.

•

**Paper:** Hinde & Dauch Paper Co. of Canada, Ltd., will spend something over $2 million to convert its Trenton, Ont., plant from straw to hardwood pulp.

The conversion is expected to be completed by late 1956.

•

**Cement:** A cement plant costing $6.1 million will be built at Foreman, Ark., by a group of Texas businessmen headed by Robert J. Smith, Dallas banker. A site (1,700 acres) has already been secured for the plant; capacity is listed at 2,500 bbls./day; construction is due to start immediately.

•

**Refractories:** The Carborundum Co. will spend $1.5 million to modernize and expand its Monofrax refractories plant at Falconer, N.Y. The program will be accomplished in progressive stages over the next five years.

Due for completion in 1956: additional storage facilities; next, more transformers to provide increased power for electric furnaces.

## COMPANIES. . . .

**Crown Zellerbach (San Francisco)** expects to receive $37.8 million in cash from Pabco Products Corp. for Crown's interest in Fiberboard Products, Inc.

This means the company will realize a profit of $24.5 million (after capital gains taxes), for Fiberboard, and will free $30 million in cash for expansion purposes.

•

**Directors of G.D. Searle & Co.** have approved a plan for a three-for-one stock split, and a change in the company's corporate name—to Searle, Inc.

•

**Marquette Cement Manufacturing Co.** has filed a registration statement with the Securities & Exchange Commission covering 262,500 shares of $4 par value common stock. Of the total, 250,000 shares are to be sold by the company, and the remainder by a stockholder. Public offering of the shares is expected Nov. 15; the company plans to use proceeds (in part) for construction of a new plant in Milwaukee and one at Cape Girardeau, Mo.

•

**Lindsay Chemical Co.** has obtained a two-year option on a monozite lode deposit in northwestern Saskatchewan. Geological surveys (by Lindsay) indicate the presence of a main vein averaging 12 ft. wide and assaying an average of 15% monazite. Thorium content of the unconcentrated ore averages a little over 1% thorium oxide.

•

**Last week's** company incorporations include:

- In New Orleans, La., American Chemical Co. of Louisiana, Inc., listing capital stock of $50,000.
- In Dover, Del., Aries Chemicals, Inc., listing capital stock of 250 shares, no par value.

•

**Warner - Lambert Pharmaceutical Co.** has purchased a 29% interest in Emerson Drug Co.

Emerson (with annual sales of about $15 million) has annual earnings of something over $1 million. Warner-Lambert reportedly hopes to obtain a larger interest in the firm.

# What's in it for you?

A producer of phenolic resins works with formaldehyde in granular form (Celanese* Paraformaldehyde). Result: shorter processing cycles, increased yields.

A paint manufacturer uses Celanese* P.E., a double-duty pentaerythritol, for both premium and standard grade enamels. Result: a more efficient inventory.

The problem is fire resistance. Celanese introduces Celluflex* CEF, a plasticizer with exceptional flame retarding properties. Result: broader applications for lacquers and plastic coatings.

Three examples of how Celanese-developed chemical industrial materials originate product improvements and production economies.

Can we give YOU a lift? Write for our new product index. Celanese Corporation of America, Chemical Division, Dept. 552-K, 180 Madison Ave., New York 16.

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Functional Fluids
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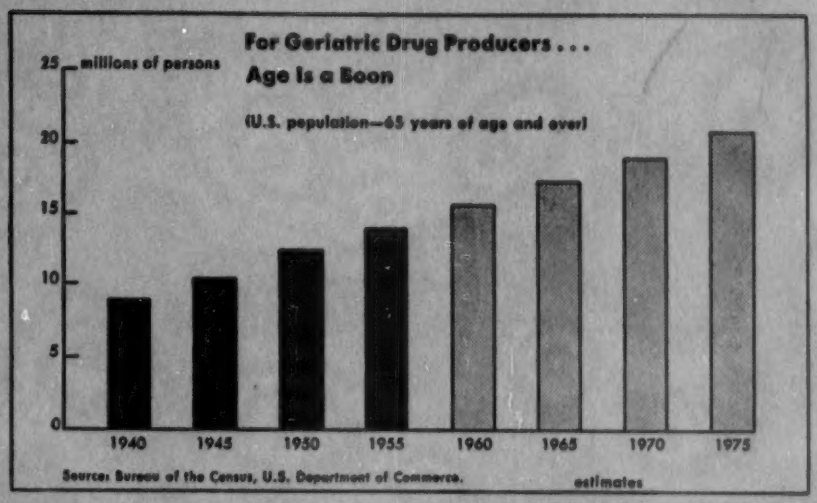
Polyols
Plasticizers
Salts
Solvents
Vinyl Monomers

Celanese* CHEMICALS

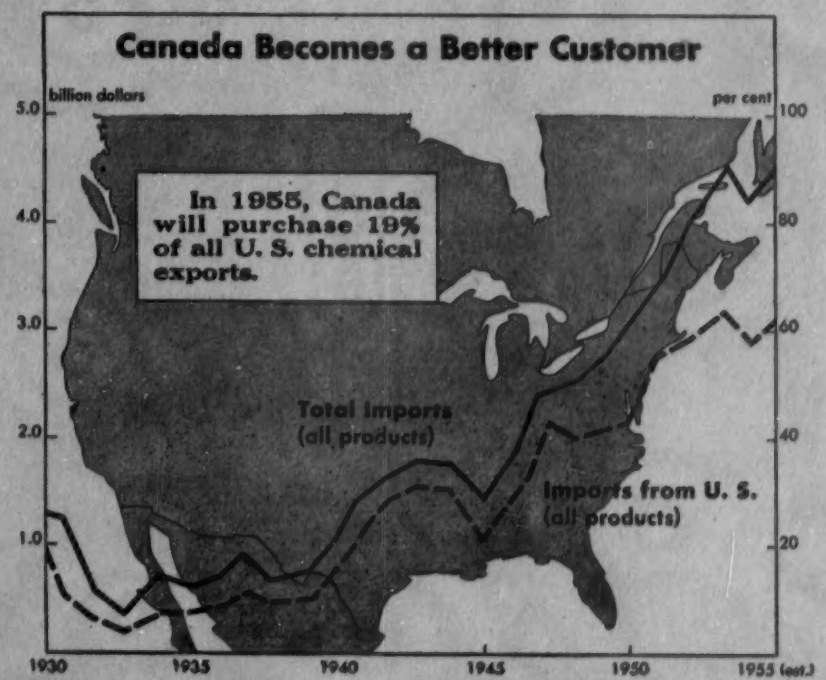
Agriculture, automotive, aviation, building, electrical, paper, pharmaceuticals, plastics, surface coatings, textiles

# Charting Business

CHEMICAL WEEK
NOVEMBER 5, 1955




RECENT advances in medical research have done much to contribute to the increasing life expectancy of the average American (*see graph*). But at the same time they have opened up a whole new field to producers of drugs particularly useful to the aged. One example: production of drugs for treatment of cardiovascular diseases—makers' sales should top $90 million this year.

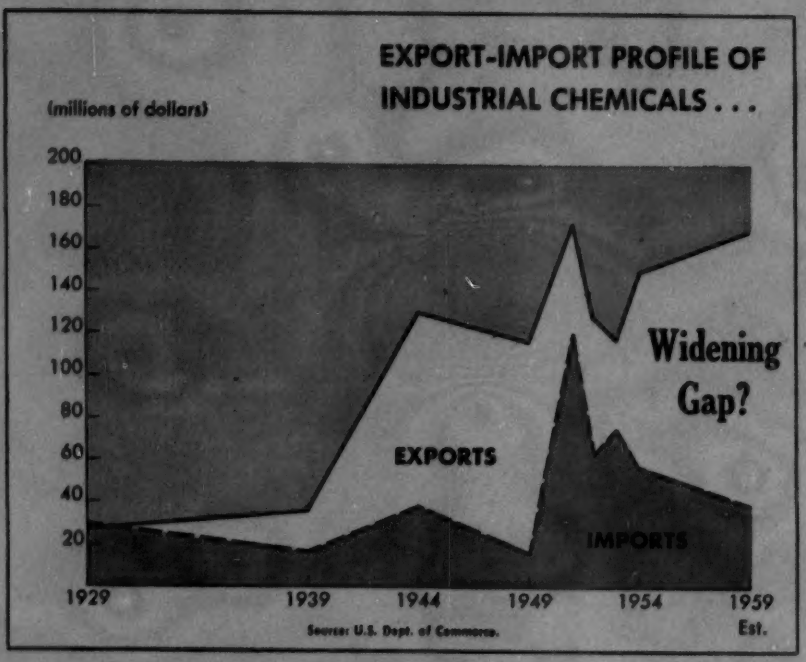



NOT ONLY is Canada the most important outlet for U.S.-produced chemicals today, but also it takes a constantly growing percentage of U.S. chemical production. Purchases by Canada in 1954 took 19% of all U.S. exports of synthetic textiles, a similar percentage of chemicals, 40% of all U.S. exports of coal, petroleum, and related products.

Canada is today buying two-thirds of all its "foreign" purchases from U.S. companies.

# Charting Business

(Continued)




AIDED by better business conditions and improved dollar balances abroad, U.S. exports of industrial chemicals are again on the rise. From 1953 to 1954, dollar value rose 25.2%—from $119 million to $149 million.

Imports of industrial chemicals, on the other hand, are easing off. Whereas in 1953 dollar value was estimated (by the Dept. of Commerce) at $74.5 million, the figure in 1954 was $58.3 million—a drop of 21.7%.

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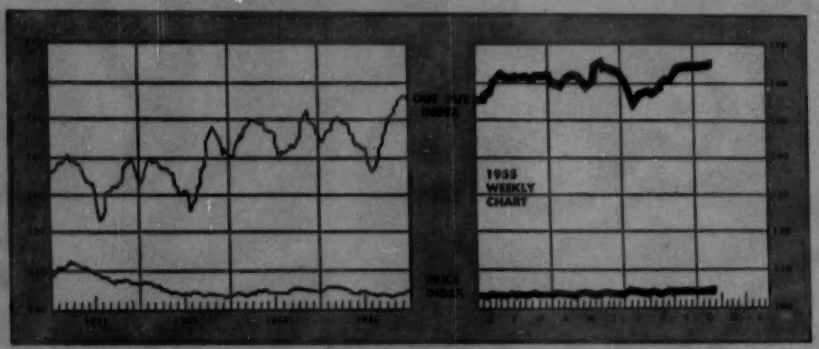
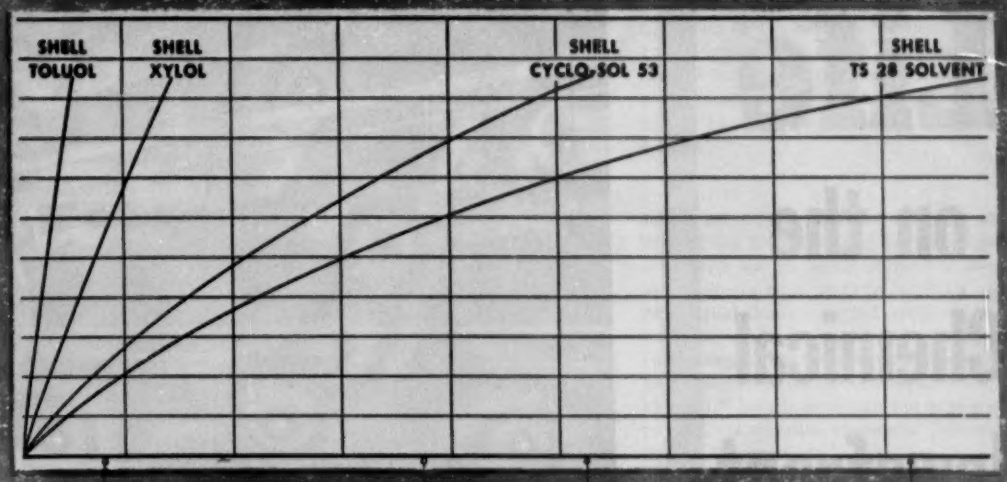



| WEEKLY BUSINESS INDICATORS | Latest Week | Preceding Week | Year Ago |
|---|---|---|---|
| CHEMICAL WEEK Output Index (1947-49=100) | 168.2 | 167.9 | 155.2 |
| CHEMICAL WEEK Wholesale Price Index (1947=100) | 104.5 | 104.6 | 104.4 |
| Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.) | 443.9 | 445.1 | 313.9 |
| **MONTHLY INDICATORS—Production (Index 1947-49=100)** | **Latest Month** | **Preceding Month** | **Year Ago** |
| All Manufacturing and Mining | 143 | 141 | 127 |
| All Chemical Products | 166 | 163 | 149 |
| Industrial Chemicals | 185 | 182 | 151 |

# SHELL AROMATIC SOLVENTS

## For all classes of surface finish application




**SHELL TOLUENE**

. . . for applications where very fast evaporation and high solvency are required.

**SHELL XYLENE**

. . . has an exceptionally narrow distillation range, is slower drying than toluene.

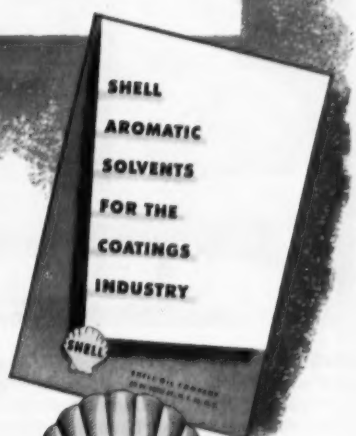
**SHELL CYCLO-SOL 53**

. . . an excellent solvent with higher flash point and slower evaporation than xylene.

**SHELL TS-28R SOLVENT**

. . . a still slower drying aromatic concentrate of medium high solvency.

These Shell solvents cover a very wide evaporation range. Their individual characteristics satisfy specific requirements in a great variety of formulations. Detailed specifications are given in a booklet which will be sent upon request.




*Write for your copy.*

**SHELL OIL COMPANY**

50 WEST 50TH STREET, NEW YORK 20, NEW YORK

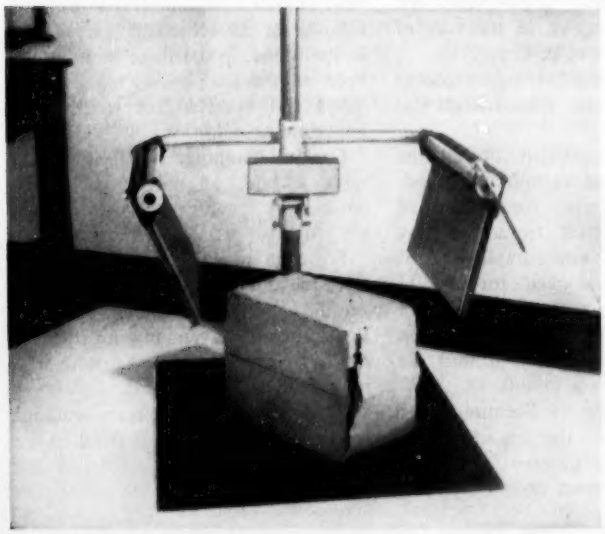
# Life on the Chemical Newsfront

**CYANAMID HAS RECENTLY RESEARCHED** two new color-stable types of Phthalocyanine blue pigments to solve the problem of color drift in automotive finishes. The new red shade Cyan Blue Toner BNF 55-3750 and the green shade Cyan Blue Toner GT–NF 55-3450 have the unique physical properties of being both flocculation-resistant and crystal-stable in automotive finishes. So now, regardless of application techniques, uniform color and depth are easily obtained on both original and refinishing coatings. **(Pigments Division)**

**UNDERWEIGHT INFANTS** now may have their appetites stimulated and rate of growth increased by a new preparation known as INCREMIN® Lysine-Vitamin Drops. Developed by the Lederle Laboratories Division of Cyanamid, INCREMIN is a combination of a vital growth-stimulating amino acid and the necessary vitamins. Based on extensive research in human nutrition, INCREMIN is prepared as a cherry-flavored liquid and packaged in an unbreakable "squeeze" bottle for easy dispensing. Effective for infants, INCREMIN also may be used for elderly persons who do not have sufficient zest for their food. **(Lederle Laboratories Division)**

**PACKAGED MEAT, FISH AND FROZEN FOODS** keep fresher longer when the cellophane wrap is coated with ACCOBOND® 3900 Resin before waterproofing treatment. The cationic nature of ACCOBOND 3900 helps to produce strong adsorption to cellophane and exceptionally high bond strength between cellophane and the nitrocellulose waterproofing coating. A new and simple test method, developed by Cyanamid research, gives rapid evaluation of bond strength and better control of the cellophane coating process. For details of the new test write on your letterhead. **(Industrial Chemicals Division, Department C)**

**A NEW LOOK** now can be given thermosetting plastic products with colored decorations molded into the top surfaces. The dinnerware pictured above is molded of Cyanamid's Melamine Molding Compound No. 1077. The decorative paper overlay is impregnated with Cyanamid's Melamine Resin No. 405. Known as a "foil," the overlay can be printed with special inks in any number of colors. It is inserted in the mold during the breathing or de-gassing phase of the molding cycle. Heat and pressure fuse the impregnated foil and the molding compound into a homogeneous mass. Many other possible applications can be envisioned: decorative door knobs, gift boxes, closures, wall tiles and cosmetic containers. **(Plastics and Resins Division)**



**NEW PERFORMANCE RECORDS** for paper packaging materials such as the carton shown in the "drop-test" above, may be established by fortification with Polyacrylamide of the conventional adhesives used in carton construction. The addition of small amounts of Polyacrylamide increases the strength and durability of the adhesive bond. It also provides high initial tack and unusual spreadability. As a result, packages are stronger and more resistant to the wear and tear they encounter in transit. Polyacrylamide is a white, odorless powder, readily soluble in cold water, and it does not decrease in solubility with increase in temperature. The remarkable properties of Polyacrylamide make it suitable for a wide range of industrial applications. **(New Product Development Department)**

# *News Briefs*

**IMPROVED PERFORMANCE IN COLORED PAPERS** is made possible with CALCOTONE* Pigment Pastes. Full color value is developed with CALCOTONE Pigment Pastes because their fine particle size and compatibility with paper additives assure excellent dispersion of the color in the beater. The CALCOTONE Pigment Pastes also have outstanding lightfastness and chemical stability. Better color results are obtained on all grades of paper ranging from tissues to heavyweight board. **(Organic Chemicals Division)**

**MORE EFFICIENT PURIFICATION OF MUNICIPAL WATER** has been obtained by replacement of dry alum with special liquid alum. The use of liquid alum reduces labor costs in handling and storage. Also, liquid alum can be fed continuously to the raw water at an accurate rate by metering devices, thus eliminating operation and maintenance of the dry feed machine. With the new liquid alum, savings of almost 10% have been reported in large-scale municipal water purification operations. **(Industrial Chemicals Division, Department C)**

**ACCONOX* FEED SUPPLEMENT,** the first antioxidant premix offered to feed manufacturers, keeps feeds appetizing longer by deterring rancidity which develops in feeds during storage. It eliminates the unpleasant smell and taste in feed by retarding oxidation. Also, it conserves vitamins A and E, thus helping to prevent deficiency diseases. ACCONOX 25 is a special blend of butylated hydroxyl toluene. It does not dust, cake, or cling to mixing equipment, thereby assuring even distribution in the mixing operation. **(Fine Chemicals Division)**

*Trade-mark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*Additional information may be obtained regarding these products by writing on your business letterhead to the Division of American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y., indicated in the captions.*

**JOE SULA: Carbide professional visitor lines up the day's visiting roster with Fred Randall, head of the Insurance Div.**

# Once Overlooked, Now a Profession

**All things to all people. That, in essence, is what the professional visitor means to employees of Union Carbide's Texas City plant.**

Actually, the job function is not new.

Chemical companies have assigned special members of the personnel department to the job of visiting the sick for many years—with varied results.

Sometimes, companies report, real resentment has been aroused among personnel who interpret the visits as an affront to their honesty. Others, acknowledging that the program has generally been relegated to the department of "extra-curricular duty," accede that "it might have worked . . . had we given it a fair chance."

At Texas City, however, Carbide and Carbon has launched the plan with a completeness that has sold its merits to grateful employees.

One man—Joe Scala (a former employee of the company's Safety Dept.)—is now assigned to the sole task of calling upon employees who are reported out on sick leave. It's Joe's task (working out of the Insurance Division of the Industrial Relations Dept.) to service a sick Carbider.

For the recently sick, he obtains insurance benefit forms, explains how they are to be filled out. For many workers who have never been ill or off the job before, he interprets the mysteries of Blue Cross—what the individual can expect in the way of length and extent of coverage.

For all, he handles salary checks and relays messages from friends and foremen.

And most important of all, he brings a feeling of warmth and friendliness to those who, for reasons of health, are cut off from company contacts. Says one employee, of Joe's visits: "I looked forward to seeing him . . . actually missed him badly the days he was unable to drop in. It gets pretty lonely around the house with no one to talk to. . . ."

**Rigid Requirements:** Because of the peculiar nature of the job of a professional visitor, unusual traits are required of the man assigned to the task.

Carbide's Texas City Insurance Director Fred Randall is the first to admit that it's not easy to find a man to fill the bill.

"Ideally," he says, "you need a man with the direction-finding ability of a homing pigeon, the patience of Job, the tact of a diplomat, the warmness of Abraham Lincoln, the perseverance of a beaver, and the courage of a bear."

Take the direction-finding ability alone. Texas City Carbiders live in all parts of Galveston County—some have moved over into Harris County. Finding the correct streets is a problem in itself. Joe, in the three months he's been on the job, knows more of the alleys and byways than residents of 25 years' standing.

**Careful Planning:** Needless to say, with a host of employees to be covered, no professional visitor could get around to everyone, every day.

So, each morning (*see cut, upper left*) Joe and his "boss," Fred Randall, outline the day's round of calls. Preference is given (1) to the recently stricken, and (2) to those who have been laid up longest.

Reason for this arbitrary culling: the sooner Joe can get around to see an ill employee and determine the nature of his infirmity, the sooner the proper insurance procedures can be set in motion. This insures that checks will start rolling in on time—when the sick person needs them most.

Hospitalized employees get third preference rating; those at home recuperating from relatively short illnesses are visited periodically.

**Other Considerations, Too:** There are a host of other considerations to be taken into account in planning the day's visiting schedule.

**HOSPITAL visits are on the daily beat as well as home interviews. Joe brings claim applications and checks, makes a sick man feel he's not forgotten.**

Joe has discovered (by trial-and-error) that there is a science of timing in visiting the sick.

"You can't drop in too early in the morning," he says. "When people are ill, they don't like to get up for early morning visits."

Then there's the matter of length of the visit. "When I was brand-new on the job, I always tended to stay too long," admits Joe. "But gradually I worked into the feel of the thing . . . The trick is to stay long enough to say all you have to say, and allow the individual to tell you his trouble—which at that precise moment is the most important thing in the world to him. But if you wear out your welcome, the whole point of the visit is lost."

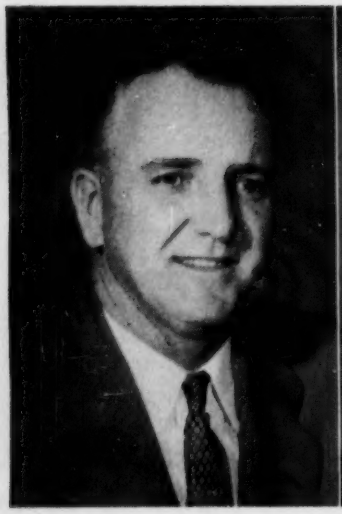
From the company's standpoint, merits of the program are many. For one thing, the personnel office and the company's insurance department get up-to-the-minute records on employees; worker morale is bolstered by the steady receipt of checks.

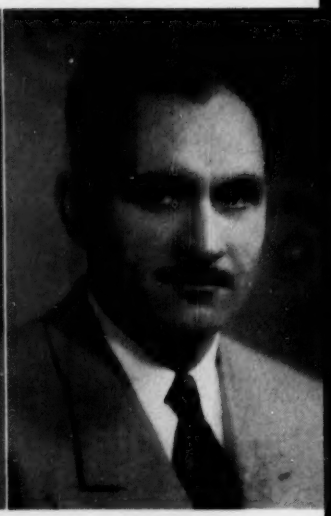
But even more important—over the long run—is the reaction of the workers themselves to the professional visitor.

Joe Scala, to sick Texas City Carbiders, has become almost as familiar a friend as the doctor. To them, he represents help in time of trouble—help on which they can rely.

**SUCCESS lies in a professional visitor's ability as a listener. Logs are a chore (right) but a help to the home office.**

UNION'S MITCHELL, HUNLEY: In 8-plant phosphate strike, they claim big gains in wages, working conditions.





COMPANY'S BOWEN, THORNTON: In 4-month siege, they withstood drive to 'encroach on management's rights'.

# Learning by Experience

**From now on, look for bargaining strategy on the part of International Chemical Workers Union (AFL) to be strongly influenced by the experience that union gained in the Florida phosphate strike that ended last month.**

That strike—or, strictly speaking, that series of separate but parallel strikes—may provide tentative answers to these questions about collective bargaining in the chemical process industries:

- How successful is multiplant bargaining—backed by a threat to "tie up the industry"—compared with the plant-by-plant negotiations that have long been normal in these conditions?
- What kind of tactics work best for the union in multiplant bargaining, and what countermeasures can the companies use?
- How many members can the union afford to have on strike at one time, and for how long?
- How well do this union's locals stick together in time of stress?

**Biggest So Far:** The phosphate strikes—involving some 3,900 production and maintenance workers in eight companies' plants and ranging from 53 days to four months in length—comprised the year's biggest work stoppage in chemical industries.

"This is the largest strike we have ever had in this international union," ICWU Vice-President Walter Mitchell declared at the union's convention in St. Louis in the third month of the stoppages. It's also one of the most important, he went on, "because it is the first time in the history of the organization that we have gone into an industry-wide strike."

It's still too early to say whether the union and its members should be credited with a net gain or loss on their 1955 phosphate bargaining. Wage increases in the final settlements were a few cents higher than the companies' original offers; the companies generally got the terms they wanted on certain fringe benefits and "the right to manage."

**Longer Contracts Signed:** But some of the things that came out of the long, strike-enforced bargaining can be analyzed for their possible effects on future industrial relations in the chemical industries. For example, the trend toward long-term contracts: one that runs four years to May 15, 1959; seven that run for two years. Swift & Co. and Davison Chemical Division of W. R. Grace & Co.—the only big phosphate producers in the state that weren't struck—have pacts expiring in 1956.

Outstanding settlement was the one that was longest in coming. The Sept. 30 agreement between International Minerals & Chemical Corp.'s Florida Dept. and ICWU Local 35 is notable for its long duration—four years; its automatic 4¢/hour wage increase each May 15; and its cost-of-living escalator clause.

This contract—whose purpose is "to promote a harmonious and productive relationship between the company and the union"—looks like a long step toward greater labor stability in the Florida phosphate fields. As of now, ICWU officials lean toward the idea of modeling their other phosphate contracts (when it's time to renew them) along the lines of the IMCC agreement; and if this works out well in phosphate plants, it might then be pinned up as a pattern for other segments of the industry.

**Floors, No Ceiling:** Architects of this agreement were Floyd Bowen, production manager of the company's phosphate division; A. C. Thornton, IMCC's director of industrial relations; and Noel Hunley, business agent for ICWU Locals 35 and 37.

The escalator clause they hammered out is interesting because of its "floors-but-no-ceiling" provisions. If the consumers' price index compiled by the U.S. Dept. of Labor rises during the last two years of the contract, wage rates will be increased by 1¢/hour for each rise of 0.7 point in the index. If the index drops during that period, wages can be reduced to—but not below—the levels established by the

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**Compare the physical properties of these new additions to the CSC family.**

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|---|---|---|---|---|
| Color, Gardner (1933) | 15 | 7 | 7 | 7 |
| Solidification Point, °C | —40 | —41 | —50 | 59 |
| Specific Gravity @ 20/20°C | — | 0.885 | 0.926 | — |
| Specific Gravity @ 25/25°C | 0.925 | 0.883 | 0.924 | — |
| Wt. per US Gallon @ 68°F, lbs. | 7.71 | 7.37 | 7.72 | — |
| Coefficient of Expansion, per 1°F | 0.00067 | 0.00061 | 0.0043 | — |
| Refractive Index, $n_D$ @ 25°C | — | 1.4631 | 1.4738 | — |
| Viscosity: | | | | |
| Saybolt Universal @ 100°F. sec. | — | 79.9 | 299 | — |
| Centistokes @ 100°F | 71* | 14.5 | 62 | — |
| Interfacial Tension Against Water, dynes/cm: | | | | |
| 0.1% solution in mineral oil | 2 | 24.6 | 18.1 | 1.8 |
| 1% in m.o. against sat. aq. sol'n | — | 10.5 | 3.7 | — |
| Surface Tension, sat. aq. sol'n. dynes/cm: | 42 | 37.6 | 37.8 | 30.4 |
| Flash Point, Cleveland Open Cup, °F | 400 | 325 | 395 | None |
| Solubility, ml/100 ml: | | | | |
| In Water | 0.005 | 0.005 | 0.4 | 0.01 |
| Water in product | — | 3.8 | 2.56 | — |

* at 96°F

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basic formula of present wage rates plus automatic annual increases.

The contract expressly forbids strikes or lockouts for any reason, sets up arbitration procedure for grievances not settled by negotiation, and provides for promotion on the basis of plantwide seniority if a qualified employee is not available within the department concerned. It calls for forming a joint safety and sanitation committee, and broadly asserts the rights of management.

**No Usurpation:** That last item—the right to manage—was at the bottom of one hitch in reaching agreement in the four-month strike. Bowen felt that the union was trying 'to usurp some of the functions of management," and his firm stand on this point was supported by company President Louis Ware.

The issue was whether the union should have a veto on certain work assignments. The company insisted on the right to transfer men to other work in case of an emergency or if there weren't enough work in one department. However, the company promised that there would be no loss of pay for employees transferred.

All of Florida's major phosphate companies recognize ICWU as exclusive bargaining agent for plant employees, and the checkoff has been in effect for a number of years. The new contracts continue those arrangements, and also specify that workers in the bargaining unit must be members of the union "as a condition of continued employment." This appears to be in conflict with the "right-to-work" amendment to the state constitution, so the agreements contain a rider stating that such provisions "shall be inoperative until legalized."

**Violence at IMCC:** Polk County Sheriff Pat Gordon is pleased that no one was killed or critically injured during the four-month strike.

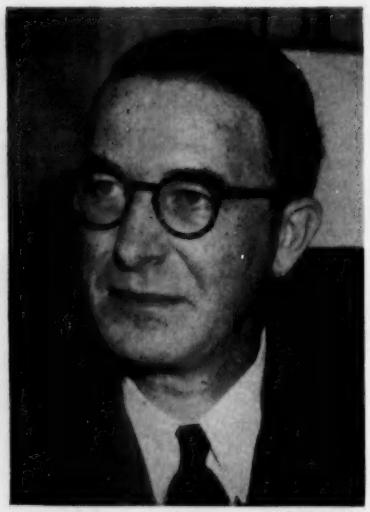
But after two hearings, Circuit Judge William Allen noted that "this strike has not been a peaceable one," although sign-carrying pickets were not disorderly. On the basis of testimony concerning 17 incidents*, he issued an injunction sharply curtailing strike activities.

Mitchell's convention speech notwithstanding, the U.S. phosphate industry was far from shut down by the strike. Production in Tennessee and the Northwest was not affected; two Florida plants were not struck; and some of the companies that were struck made regular shipments from stockpiles.

ICWU—and its CIO counterpart as well—would like to do more of its bargaining on a multiplant basis (*CW, Oct. 29, p. 32*). For both unions and management, the 1955 Florida phosphate episode is likely to serve as a kind of textbook to be conned carefully before starting any future negotiations that might be extended to cover various plants.

* Ranging from a "warning" to drivers not to go into an IMCC plant to an explosion that demolished the control room of the sulfuric acid unit at IMCC's Bonnie plant.

SHERIFF GORDON, JUDGE ALLEN: No lives lost, but too many 'incidents.'



WIDE WORLD

SENATOR KEFAUVER: To druggists, a warning of monopolistic peril.

## LEGAL

**Danger in Mergers:** A threat to small business—that's the way Sen. Estes Kefauver (D., Tenn.) is describing last spring's report by an Attorney General's committee on revision of antitrust and pricing laws. Before a convention of the National Assn. of Retail Druggists in Atlantic City last fortnight, Kefauver blasted that committee for having ignored what he considers three current perils for small businesses:

- "The wave of mergers now sweeping the country."
- Loopholes in the Robinson-Patman Act on quantity discounts on manufacturers' sales to dealers.
- Effects of repeal of the "fair trade" law—as recommended by that committee.

•

**Trademark Similarity:** The U.S. Court of Customs and Patents Appeals still thinks that "Brisk" sounds too much like "Breck." The court has denied the Armand Co.'s application for a rehearing on its request that its trademark Brisk—used on shaving cream since 1928—be extended to hair-dressing cream, shaving lotion and other products. This move has been opposed by John H. Breck, Inc., maker of Breck hair and scalp preparation.

•

**Broader Business Basis:** Under the new Texas state business corporation

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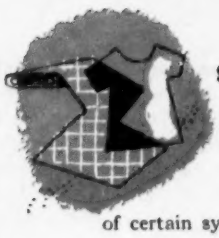
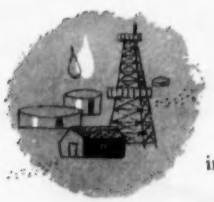


**SYNTHETIC FIBERS**

DMSO has excellent potential for use as a solvent in the manufacture of certain synthetic fibers. Included are polyacrylonitrile, acetate cellulose, and polyvinyl chloride. It also is a solvent for acrylic resin polymers.

**ACETYLENE**

Approximately 32% more acetylene can be absorbed in DMSO than in acetone. It also has a lower volatility than acetone showing promise of much longer life per cylinder charge effecting considerable overall cost savings.



**PETROLEUM**

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act, Humble Oil & Refining Co. has amended its articles of incorporation to provide that the company can mine sulfur, uranium and other minerals and to "acquire, produce, manufacture and market chemicals."

•

**Identical Bids:** Frank Dunbar, Jr., executive director of the Ohio Turnpike Commission, is asking U.S. Justice Dept. to look into "a possible monopoly setup" in the calcium chloride business. He says that Dow, Columbia-Southern, Wyandotte, Scioto Supply Co. and Toledo Plaster & Supply Co. each offered to furnish that de-icing product at the same price, $29/ton.

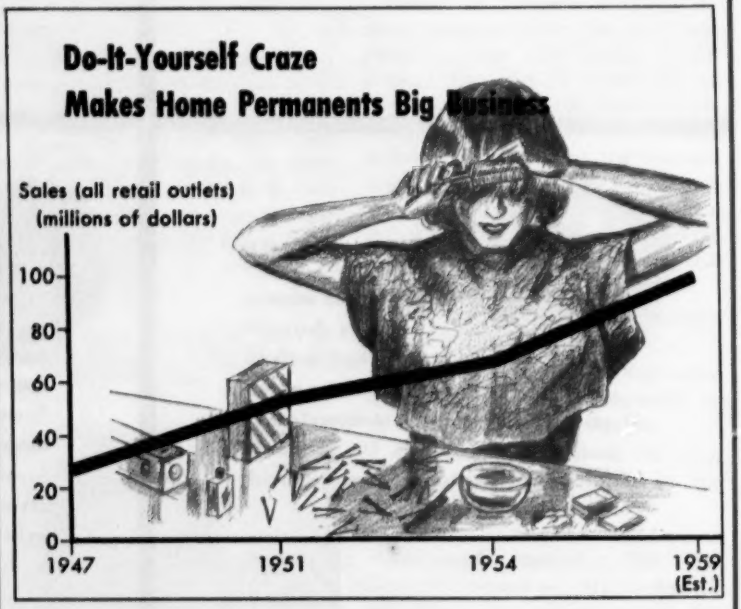
•

**Quick Decision:** The U.S. Supreme Court deliberated only one week before deciding in favor of Liquid Carbonic Corp. and against the government in the dispute over the company's right to use certain of its plants after having signed a consent decree in an antitrust case several years ago (*CW, Oct. 1, p. 32*). A lower court last year banned use by Liquid of two of its plants when a court-appointed trustee failed to sell them. Now the justices have thrown out the lower court's injunction and ordered new hearings.

•

**Challenge on Stockpiling:** A small manufacturer—Heyer Products Co., Belleville, N.J.—is challenging legality of the federal government's stockpiling program. His suit charges the government with having caused a 13% increase in the price of copper.

## IMPACT




# Fancy Tresses, Frilly Profits

THE WAVE of acceptance that women have stirred up for home permanents is sure to delight chemical suppliers. One reason: as kit sales sweep upward (they hit the 55-million-kit mark last year), chemical profits soar accordingly. In 1954 alone, an estimated 13.1 million lbs. of lotion for home permanents was sold. Thereby consumed: 655,000 lbs. of thioglycolic acid; 798,000 lbs. of ammonia solution (28% by weight); 13,000 lbs. of perfuming agents: 131,000 lbs. of emulsifiers (like lauryl sulfates, protein detergents); 196,000 lbs. of mineral oils; 26,000 lbs. of wetting agents.

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**IN PETROLEUM** (*Gasoline Additives, Lubricants*)

**IN CHEMICALS** (*Synthetic Fabrics and Yarns*)

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Isopropyl Acetate
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Dicyclopentadiene
Ethyl Ether
Isopropyl Ether
Naphthenic Acids
Iso-Octyl Alcohol
Decyl Alcohol
Denatured Ethyl Alcohol

**CHEMICAL**
PETROHOL 91
PETROHOL 95
PETROHOL 99
JAYSOL
Iso-Octyl Alcohol
Decyl Alcohol
Denatured Ethyl Alcohol
Tridecyl Alcohol
Dicyclopentadiene
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# For Professors: A Bird's-Eye View

COLLEGE CAMPUSES (in the form of 12 visiting professors*) were given a close look at the chemical industry last month—courtesy of Monsanto Chemical. The professors arrived in Texas City (*see cuts*) by company plane after a day's visit at St. Louis headquarters. Accompanying them on the trip: two Monsanto vice-presidents, Frank Curtis and Carroll Hochwalt.

Purpose of the program is to give educators the opportunity to learn first-hand just how industry utilizes their product—the college graduate.

* Seen above: E. E. Litkenhous, Vanderbilt University; E. W. Dwyer, Monsanto public relations director; Dick Ludlum, engineer at Texas City; below: Matt Jones, Monsanto engineer; J. L. York, University of Michigan; B. E. Lauer, University of Colorado.

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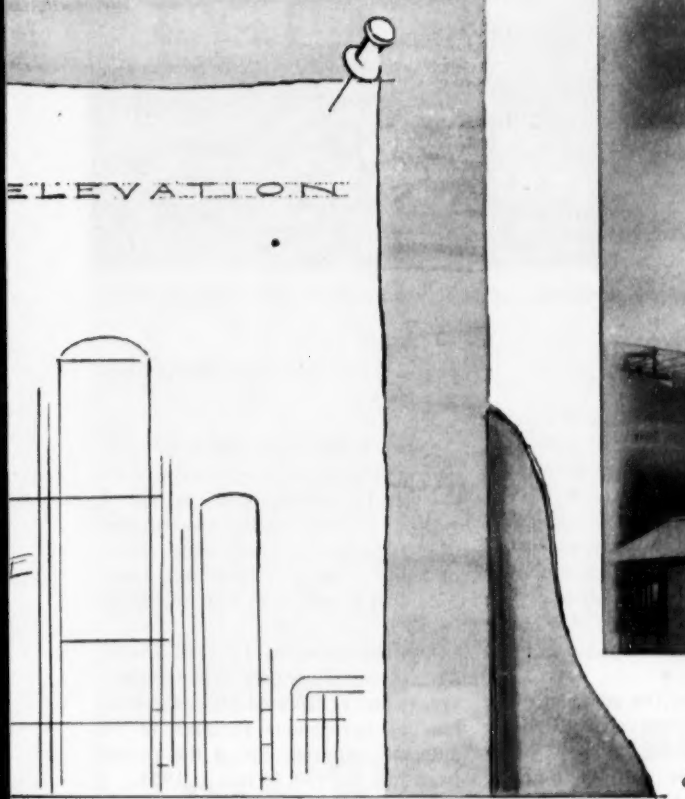


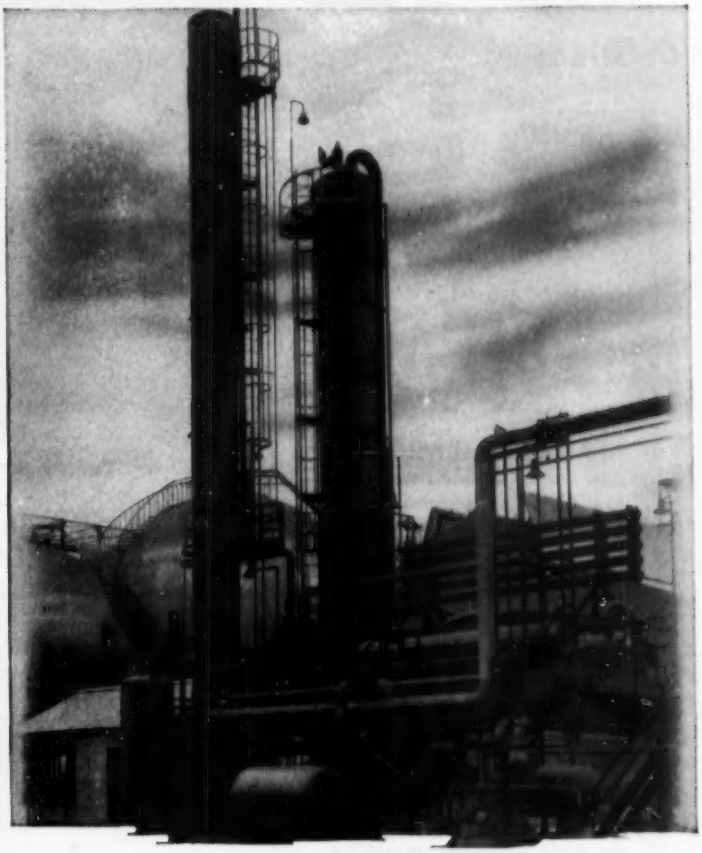

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## BUSINESS & INDUSTRY. . . . . .

**PECHINEY: Pushing production of basic chemicals to meet rising demand.**

## FOREIGN. . . . . .

**Chemical Industry/France:** Led by giant Pechiney, the pace of activity in France's chemical industry is quickening this fall. Sales of most leading chemical firms should be up some 15% over 1954, company executives report. Demand for French-produced products is growing—particularly in North Africa. Outlook for 1956: additional—though decelerating—gains.

•

**Fertilizer/India:** The government of India is considering construction of a $21-million fertilizer plant in collaboration with the Stanvac Bombay Refinery on Trombay Island.

The government, according to its Production Minister, has already entered into negotiations with the U.S.-owned oil company for purchase of waste gases, would also tap adjacent waste of Burmah-Shell Oil Co.'s refinery if the project goes through.

•

**Exports/West Germany:** West Germany's exports of chemicals rose more slowly than imports in the first half of 1955, late statistics point out. Whereas the value of exports jumped 18% (to 1,630 million marks) over first half of 1954, imports increased 35%—to 570 million marks.

Most of the export increases went to markets outside Europe. Asian markets took chemicals worth 283 million marks (or 15% of all exports); North America and Central America increased their purchase of German-produced chemicals to almost 138 million marks.

•

**Paper/British West Africa:** Government officials in Nigeria are currently studying the possibility of creation of a paper industry in the eastern part of the country. First step: construction of a pilot plant near Abakaliki, about 125 miles northeast of Port Harcourt.

•

**Fertilizer/Austria:** Linz Stickstoffwerk A. G. (Austria's national fertilizer industry) exported 356,000 metric tons of nitrogenous fertilizer to 28 different countries during the period from July 1, 1954, to July 1, 1955.

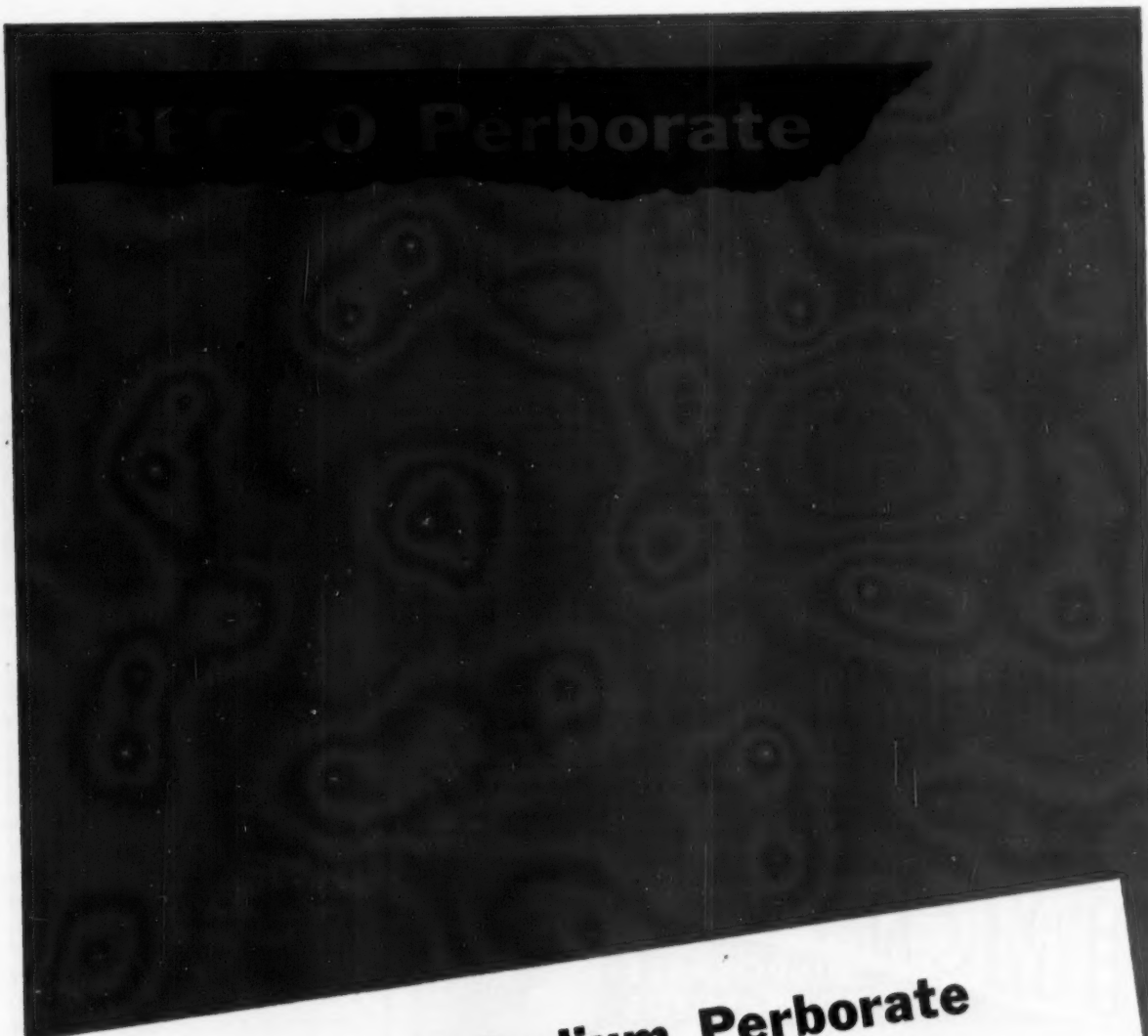
This export quota marks the highest level for the 14-year-old plant—built by the Germans during World War II.

Top production level, the government claims, was reached during the month of March 1955—when 11,600 metric tons of nitrogen were produced.

Moreover, during the first quarter of 1955 (January through March), 30% of the industry's total production was sufficient to meet domestic requirements.

•

**Chemical Fibers/Japan:** Japanese production of synthetic fibers during the month of September alone amounted to 8.5 million lbs., according to the Japanese Synthetic Fiber Assn. Inventories during the same period decreased considerably—due to recent increased demands both at home and abroad.

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| Form | —White crystalline powder |
| Stability | —Substantially no loss under ordinary storage conditions |

*Write for Bulletin 45, "Becco Sodium Perborate", or for Becco's complete list of bulletins on the uses of peroxygen chemicals.*

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B&I . . . . . .

WIDE WORLD

**STATISTICIAN CLAGUE:** In computing wage data, he may fix rates.

## LABOR . . . . . .

**Hitching to an Average:** The agreement that ended the 17-day strike by members of District 50, United Mine Workers, at the Monsanto Chemical plant in Nitro, W. Va., contains a novel wage clause that might put Commissioner Ewan Clague of the U. S. Labor Dept.'s Bureau of Labor Statistics in the role of a determiner—as well as a computer—of wage levels. The two-year contract calls for a 10¢/hour wage boost now, and next year a rise of either 4¢/hour or the increment in the average hourly earnings of production workers in all U.S. manufacturing industries, whichever is greater. Clague's agency also computes the consumers' price index on which some other wage escalation plans are pegged *(see p. 26)*.

•

**Drive on Discrimination:** The week brought a number of developments in the drive to curb discrimination in industry.

• In Harrisburg, Pennsylvania's general assembly has passed—after long deliberation over alternate measures—a bill that would ban job discrimination because of race, color or creed.

• Washington has become the eighth state to adopt a code forbidding employers to ask job applicants any questions about race, religion or nationality. The new code—expected to go into effect next spring—also prohibits questions about birthplace and relatives.

These progress pictures, made in August, show portions of Escambia Bay Chemical Corporation's nitrogen plant now nearing completion at Pensacola, Florida

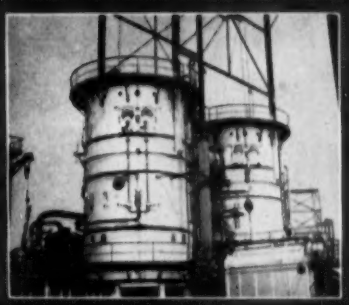
# ON SCHEDULE

ESCAMBIA BAY

## ESCAMBIA BAY CHEMICAL PLANT

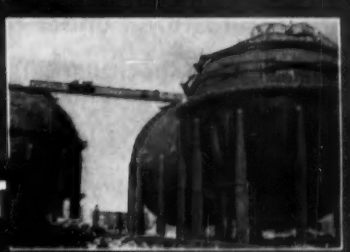
Nitrogen materials for agriculture and industry will be available from the Escambia Plant which will provide complete nitrogen production for the Southeast. Products will include anhydrous ammonia, ammonium nitrate, nitrogen solutions and nitric acid.

Escambia Bay Chemical Corporation is owned by United Gas Corporation, Electric Bond and Share Company and National Research Corporation.



Primary gas reformer units which are the heart of the process where natural gas is cracked to hydrogen.

Gas purification section where the main gas stream is freed of carbon dioxide and carbon monoxide in order to insure feeding a pure nitrogen-hydrogen gas stream to the converter.



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## B & I . . . . . .

• By a vote of 487 to 155, members of United Rubber Workers (CIO) decided to go back to work at the General Tire & Rubber plant in Waco, Tex., after a two-day strike that followed transfer of a Negro employee into a work unit that previously had been manned entirely by whites *(CW Washington Angles, Oct. 22)*. The union says the Negro will stay in his new post. The company explained that under its no-discrimination pact with the union, it had no choice but to make the transfer.

• Two locals of Oil, Chemical & Atomic Workers Union (CIO) have voted in favor of no-discrimination agreements. The OCAW local at the Phillips Petroleum refinery in Kansas City, Mo., has ratified an agreement providing for equality of opportunity on promotions, and the local at the Gulf Oil refinery in Port Arthur, Tex., is asking management to accept a plan to liberalize job opportunities for Negroes.

## KEY CHANGES . . .

**John D. Fennebresque,** to vice-president, Food Machinery & Chemical Corp. (San Jose, Calif.).

**Walter S. Colvin,** to director, agricultural sales, Nitrogen Division, Allied Chemical & Dye Corp. (New York).

**F. William De Bree,** to general sales manager, American Plastics Corp. (New York).

**L. W. Wasum,** to president, Kessler Chemical Co., Inc. (Philadelphia).

**Leon P. Brick,** to executive vice-president and acting president, Onyx Oil & Chemical Co. (Jersey City, N. J.).

**Charles F. Fuchs,** to director, Emulsol Chemical Corp. (Chicago).

**Harold L. Danziger,** to general sales manager, R. M. Hollingshead Corp. (Camden, N. J.).

**Victor E. Cole,** to vice-president and assistant general manager, Kaiser Gypsum Co. (Oakland, Calif.).

## KUDOS . . .

To **Victor Conquest,** vice-president, Armour and Co. (Chicago), the Industrial Research Institute Medal for 1956.

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2903

SPINDEL (left) AND TAYLOR: Their isotope-exchanger charts a . . .

# New High for Nitrogen-15

**In a basement laboratory at Columbia University, chemistry professor T. Ivan Taylor and research associate William Spindel capped over a year's research this week by preparing nitric acid composed of 99.5-atom-% nitrogen-15 (199 atoms of nitrogen-15 in every 200 nitrogen atoms).**

Significance: hitherto unavailable, nitrogen-15 of this high purity is an important adjunct to nuclear (e.g., neutron absorption) studies, has potential application in future atomic power reactors.

That's because the isotope shows much lower neutron absorption than ordinary nitrogen-14, a property that is highly desirable in thorium-type breeder reactors. Thorium nitrate (nitrogen-14), a possible fuel breeder in such reactors, absorbs too many neutrons for efficient fuel production.* But the same compound made largely of nitrogen-15 would eliminate this disadvantage.

Thus far, however, the high cost and relatively low concentration of commercial nitrogen-15 has kept it out of the running for this application. The tiny quantities available from Eastman Kodak bear an impressive price tag: about $270/gm. for 30-atom-% purity nitric acid; $390/gm. for the 60-atom-% product. Based on calculations by J. S. Drury and associates at Oak Ridge National Laboratory, the new process (*see below*) could slash costs of nitrogen-15 (as 95-atom-% nitric) to $4.21/gm. based on a 1-lb./day plant, and $1.50/gm. for production at the rate of 50 lb./day.

Costs of a modified Eastman process — an isotope exchange (between ammonia and ammonium ion) developed by Harold Urey—figure to $8.71/gm. and $2.38/gm., respectively (for 1 and 50 lb./day). This would be many times larger than the firm's present capacity. Item: one thorium breeder reactor requires five tons of nitrogen-15 as thorium nitrate.

Right now, Taylor and Spindel are producing about 1 gm./day of nitric acid containing 98-atom-% nitrogen-15—said to be top purity obtainable under continuous bench-scale operation. But they see no reason why a large plant shouldn't be feasible.

One obvious drawback is that sulfuric acid is a copious by-product of the process.

For production of 1-lb./day of nitrogen-15, about 24 tons of sulfur dioxide would be required, and about 37 tons of sulfuric acid would be formed as a by-product. Taylor and

* In the thorium-type breeder reactor, thorium is converted into fissionable uranium-233, which serves as fuel. This is accomplished as follows: a core of uranium-233 is surrounded by a blanket of thorium nitrate solution; as the uranium-233 atoms fission they shoot their neutrons into thorium atoms, converting the latter into more uranium-233. The new uranium-233 is extracted by processing the blanket, and is returned to the reactor to keep the "fire" going.

HOW IT WORKS: Nitric acid is exchanged with nitric oxide in packed 18-ft.-high fractionating columns (*right*). Fifty percent nitric acid (10 molar), containing the ordinary amount of nitrogen-15 (3.7 parts to 1,000 parts of nitrogen-14), flows into the first column at the rate of 15 ml./min. About 5% of the flow from the first column passes into the top of the second column. Nitric acid is refluxed at the lower end of each column with sulfur dioxide, yields nitric oxide, which passes up the column to exchange with the descending acid. Sulfuric acid (50% concentration) is produced as a by-product. Nitrogen-15 concentration is about 6% at the bottom of the first column, 99.5% after passing through both. Controls (*center*), $HNO_3$ recovery column (*left*) complete the apparatus.

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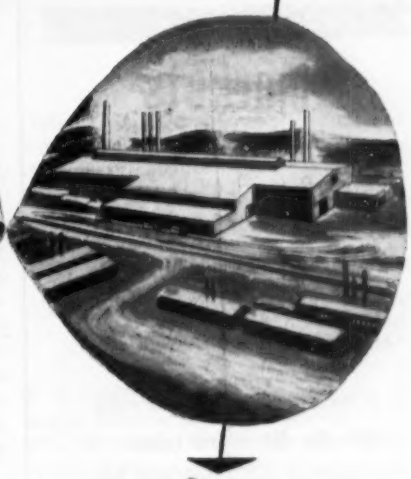

## In Industry

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Spindel are fully aware of the commercial implications of this imbalance, but believe their process could turn out sulfuric at a near competitive price.

If demand for nitrogen-15 reaches substantial proportions, disposal of the acid will not, they feel, prove an insurmountable hurdle.

## Acrylic Stretch

**Boeing, Lockheed, and other aircraft manufacturers are now evaluating glazing materials made of stretched acrylic plastics. Swedlow Plastics (Los Angeles) is supplying the parts, claims they are substantially lighter-weight, tougher and more resistant to crazing and fracturing than transparent plastic glazing components now in use.**

Swedlow asserts that it is the only company commercially producing stretched acrylics, although Goodyear Aircraft is said to be offering materials of essentially the same description. Several others reportedly have comparable developments in the pilot plant.

Key to the properties of the new plastics is the technique of stretching, which Swedlow prefers not to discuss. Patents have been applied for, but all the company will reveal is that the method involves a purely mechanical treatment of the as-cast acrylic sheet. About 3½ years of research reportedly went into the process.

In effect, the method yields a lightweight plastic that is said to do the same structural job as appreciably heavier unstretched counterparts. And that's music to the ears of aircraft designers, who are desperately seeking ways to reduce the weight of their advanced, high-speed creations. Swedlow hopefully foresees stretched acrylics ultimately replacing aircraft acrylics such as as-cast Plexiglas 1, 2, 55, and laminated Plexiglas.

It is already furnishing windshield side panels for the new Convair F 102 fighter.

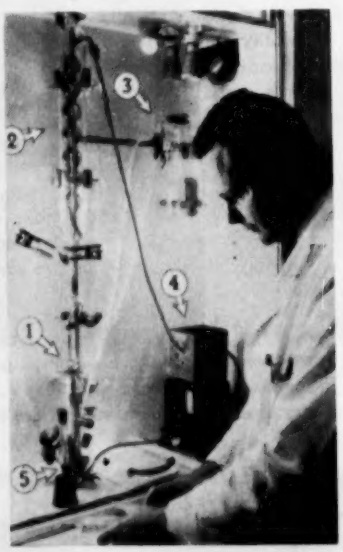
In addition to finished parts, the company reports that it is producing stretched acrylic sheeting in sizes up to 4 ft. sq. and ⅜ in. thick. Larger (up to 80 in. sq.) and somewhat thicker sheets are planned.

Also on the docket is production of polymethyl $\alpha$-chloroacrylate (General Aniline's Gafite), a transparent plastic possessing a higher heat-distortion point than other currently available acrylics. Additional research is apparently required here, although the company expects to have stretched Gafite available within the next few months.

Stretching significantly increases the cost of the plastic to the consumer, but even so, the chances are that stretched acrylics—if they live up to their billing—won't be beyond the reach of consumers of customers in the aircraft industry.

## Glass Anatomy

KEPT ALIVE under glass, rat livers such as the one at point 1 (*above*) are a biochemical research tool for University of California (Berkeley) Professor Harold Tarver. Of potential value (to industry) in testing the nutritional effects of chemicals, the novel apparatus is comprised of mechanical lungs (2); oxygen intake and moistener (3); heart (4); and bile collector (5). Emulating a live rat, the "heart" pumps blood through a plastic "artery" to the glass "lung" where it receives fresh oxygen before flowing to the liver, and then back, to start the cycle anew.



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| Total backlog* (thousands) | Immediate backlog** (thousands) | Patents allowed† | Total backlog* (thousands) | Immediate backlog** (thousands) | Patents allowed† |
|---|---|---|---|---|---|
| SEPT. '54 33.0 | 21.8 | 206 | APR. 36.5 | 22.3 | 459 |
| OCT. 33.4 | 22.4 | 211 | MAY 36.9 | 22.2 | 477 |
| NOV. 34.1 | 23.0 | 221 | JUNE 37.5 | 22.8 | 536 |
| DEC. 34.7 | 23.6 | 205 | JULY 37.6 | 23.0 | 423 |
| JAN. '55 35.3 | 23.9 | 296 | AUG. 36.9 | 22.1 | 605 |
| FEB. 35.6 | 23.4 | 335 | SEPT. 36.9 | 21.8 | 581 |
| MAR. 36.1 | 22.7 | 440 | | | |

* Includes all chemical (group one) examining divisions, but only some related divisions.
** Applications awaiting examiners' action, but not those sent to applicants for their actions.
† Includes patents allowed, but not those abandoned.

**PATENT DATA: Awards are on the increase, the backlog dwindling as . . .**

# Patent Office Shifts into High

**There's good news for chemical companies with patent applications in the works. The Patent Office is moving into a six-day-a-week schedule, and is well along towards hiring 300 new examiners—an increase of almost 50% over the total of such technical personnel employed back in June.**

It means that some 700 patents should be issued in January, about 930 next May (compared with some 296 patents issued last January).

This boost can be attributed to the increased funds that Congress gave the Patent Office for the current fiscal year: $14 million, a raise of $2.5 million over fiscal 1955. The Appropriations Committee, because of complaints from industry about the slowness in the office, offered even more. But patent officials demurred, claiming that this was the maximum amount that could be used wisely this year.

Consequently, some Washington patent attorneys expect the Administration to ask for a further increase in next year's budget—perhaps $16 million for fiscal '57.

The extra money will be used to hire and train new examiners. Goal: to cut down the average time needed for processing a patent to 18-24 months, about half the period now required.

But that's a comparatively long-term measure. Right now, in order to cut down on the backlog, over 300 examiners work Saturdays. This overtime work, point out patent officials, is in fact less costly than hiring new people. It costs an average of $55 for Saturday disposal of a patent application by a trained examiner, compared with $120 for a regular-time disposal by a first-year examiner.

**Extra Measure:** Companies that have had patents under consideration for a long time will find an extra measure of encouragement in recent goings-on. Normally, applications are processed in a strict numerical order, except for some limited categories that receive special handling. But now the definition of patents requiring such out-of-order handling has been broadened: every patent that has already been acted on two or more times by an examiner is to get expedited treatment in future handling.

Patent Office officials admit that Saturday work and priority handling are not long-term answers to their problems. A lasting solution doubtless would involve machine searching techniques (*CW, Jan. 22, p. 52*) to help speed examiners' work. But it's felt that the increased money appropriated to the office, means that the corner has been turned.

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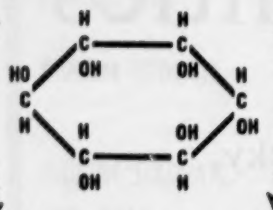

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## RESEARCH

**Dairy Drug:** Maracarb NC, a complex mixture of lignosulfonic and wood sugar acid salts, is reported to show promise in preventing cattle ketosis, a disease that reduces the milk output of dairy cattle.* Marathon Corp. (Rothschild, Wis.), which obtains the salts as a by-product of lignosulfonate production (from spent sulfite pulping liquors), states that recently terminated field tests indicate "an apparent effectiveness of 84%" for the product. Limited quantities will be available (as a feed additive) for test-marketing later this year.

•

**Candidates:** Two substituted thioureas, recently studied by Ciba microbiologists, have shown high antituberculosis activity (in animals), low toxicity. The compounds in question are 4-ethoxy-4′-isobutoxythiocarbanilide and 4-butoxy-4′-dimethylaminothiocarbanilide. *In vitro* resistance to the latter is said to develop more slowly than resistance to streptomycin, *p*-aminosalicylic acid, or isonicotinic acid hydrazide (isoniazid). Moreover, a combination of the butoxy derivative with streptomycin or isoniazid is reported to retard the emergence of bacterial strains resistant to either of the two.

•

**Plans:** Cranbury, N. J., is the site of the new product research center planned by Cities Service. The company has purchased 100 acres adjoining the New Jersey Turnpike, proposes to construct laboratories for 150 researchers and technicians. Facilities for utilizing radiation and radioisotopes are included in the blueprints for the structure. Cities Service now operates laboratories at Lake Charles, La., and Tulsa, Okla.

•

**Frontier Research:** University of Buffalo is asking the Atomic Energy Commission for permission to build a nuclear research center. Cost of the project — an estimated $750,000 — would be borne by Niagara Frontier companies, which would have access to the center's research reactor. Talks with a number of firms are already in progress. AMF Atomics, a subsidiary of American Machine & Foundry, has been retained by the university to provide technical assistance in preparing the application for a reactor-construction license. AMF Atomics presumably will also design and construct the reactor. Aside from its projected role in industrial research, the nuclear research center will be used to train engineering students.

•

**Information:** Data on German processes of manufacturing intermediates is now available from Research Information Service (New York). Two new bulletins—"Chemical Intermediates" and "Organic Intermediates"—contain information on about 150 processes.

•

**Opportunity for Sulfur:** Researchers of the Dept. of Agriculture have discovered that inorganic sulfur (as sulfate) can partly replace the sulfur-containing amino acids (cystine and methionine) in chick diets. Significance: a potential market for sulfates as poultry feed additives. Uncovered in radioactive-tracer experiments, the discovery demands considerably more research to plumb commercial value.

•

**Equipment Entries:** These new laboratory aids were making their debut this week:

• For determining sulfur or hydrogen in petroleum products by the lamp method, a new apparatus is available from Apex Scientific Co. (Orinda, Calif.). The newcomer reportedly meets the requirements for American Society of Testing Materials tests D-90, D-1018, and D-1266. Price: $2,000, f.o.b.

• Taylor Instrument (Rochester, N.Y.) is now using a special pigment to mark its etched stem, mercury-filled, laboratory thermometers. Trademarked Permafused, the reddish-brown pigment is said to improve legibility, prolong the life of thermometer markings, and eliminate pigment contamination of solutions.

• For quick, simple gas and liquid analysis, Podbielniak, Inc. (Chicago) offers its new Chromacon vapor-phase chromatograph apparatus. An accuracy range of 1-4% of component is claimed for the instrument.

• Precision Scientific Co. (Chicago) has redesigned its Vari-Heat extraction rack. New features: individual aluminum hot plates, stepless heating from 250-650 F (controlled by individual rheostats).

* Dept. of Agriculture estimates annual loss of milk due to ketosis at 116.7 billion lbs., valued at $4.2 billion.

# WRITE FOR THIS FOLDER

## See why and how Swift's Stearic Acids invite comparison . . .

If this folder reported in detail all the laboratory testing and research that have gone into its preparation, it might take you 10 hours to read. But you can read it from cover to cover in 10 *minutes*—and throw it away when you're through!

But, toss it or treasure it, if *you* use stearic acid there's a story in this folder for you. It's quick, it's basic and it's documented—it's this:

*Swift's Stearic Acids invite your comparison on the basis of color, color and heat stability, freshness and application purity to that of any product manufactured for similar use.*

The folder reports on exhaustive comparative tests made between Swift's Stearic Acid and as many as 7 similar products on the above points. Reduced to their essentials, the results of these tests mean this to you:

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**FAR-FLUNG TECHNIQUES: Du Pont's Orlon turns up in Paris styling, shows that synthetic fibers are . . .**

# Stretching a Lot Farther

**Synthetic fiber producers this week were at least agreed on one item: distribution methods must be broadened. That point was underscored at the Textile Distributors Institute clinic. But how to do it is subject to wide debate.**

Surging output and a rash of new fibers have left producers breathless in the race for production and competitive footing. As a result, thoroughgoing marketing techniques have largely been neglected.

Root of the difficulty has been producers' reluctance to recognize themselves as textile businessmen as well as chemical processors. Says American Viscose Corp. (Philadelphia), "Those in the man-made fiber industry must direct their talents to the needs of the textile industry . . ." But textiles are alien to many chemical processors.

Compounding the problem to producers is the fact that, like it or not, they'll be footing most of the bills for projecting enlightenment to the consumer. Textile manufacturers claim their margin is so small (*see chart*) that they can't do the merchandising job without help, while fibermakers claim the same disadvantage. Unfortunately, producers' high investment and production volume make margins appear less critical than they are.

Most producers are nevertheless preparing to extend their methods, are following patterns set with older fibers, working with levels all the way to the consumer—from textile manufacturer through converter, cutter and retailer. But where emphasis should be put is a matter of widely varying opinion.

**Consumer Promotion:** Going straight to the consumer is a major factor in American Viscose's "Avisco Integrity Tag" program, just getting under way. As Avisco sees it, the tag will be visible evidence to consumers that the product has been fabricated according to the company's standards. Secondarily, the Avisco name on all its products is intended to establish a single reference name—a problem faced by other chemical processors in



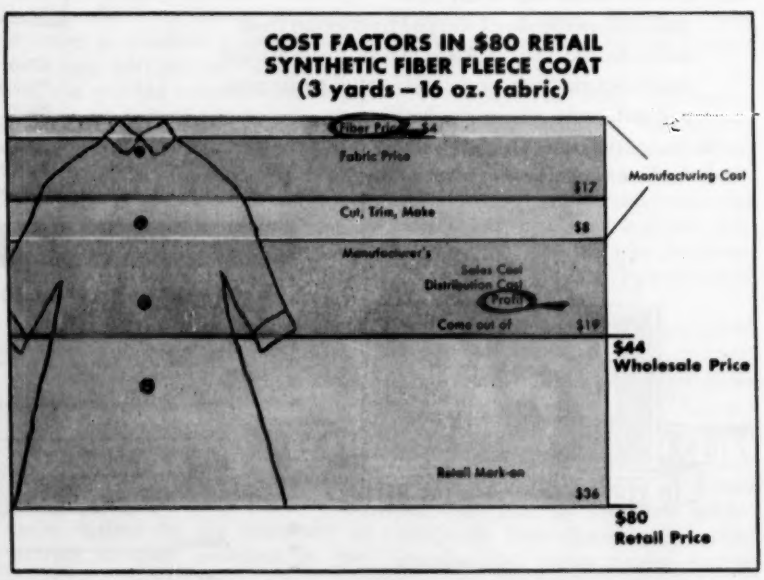
merchandising the company.

To back up the plan, Avisco will maintain a quality control program, will randomly require samples from fabricators for quality control tests. If the products fail, license to use the tag will be temporarily withdrawn along with merchandising and cooperative advertising benefits. Avisco is optimistic about prospects, claims it's the only tagging program backed up with quality controls.

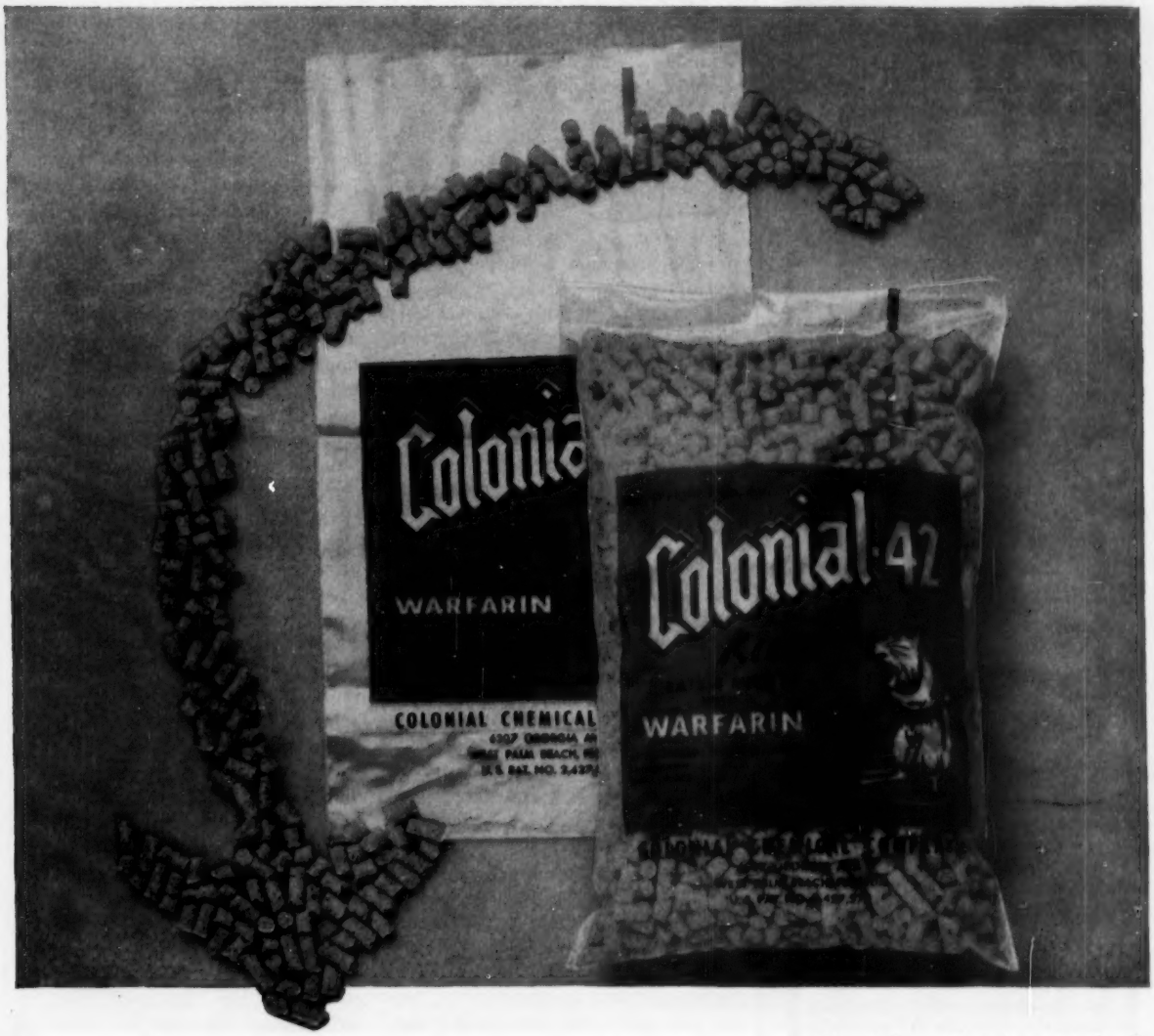
Also consumer-minded is Allied Chemical Corp., which is starting up its high-tenacity Caprilan, prefers consumer promotion over retailer. Reason: tremendous educational media, e.g., TV, more consumer leisure for learning, broader magazine readership are desirable advantages over retailing disadvantages of high clerk turnover, inventory pressures. Following the same line is Carbide and Carbon Corp., whose promotional work includes cooperation with the U.S. Dept. of Health, Welfare & Education in preparing a synthetic fiber manual.

**Retail Approach:** Many think the retailer can be approached, can be influenced on the buying level. Pointing out that retailers are often at the mercy of shoddy manufacturers, Tennessee Eastman (Kingsport, Tenn.) feels that retail buying personnel would welcome education, would put it to use in demanding creditable products.

To back this up, Eastman suggests




**MARGIN COMPLAINTS: Textile people, fibermakers both claim slim margins.**




# *"...exceptional savings"*

Results with polyethylene packaging have been excellent, according to O. F. Bissen, manager, Colonial Chemical Company, West Palm Beach, Fla. **"We save 86¢ on every dozen** in package material costs. The labor in filling and closing polyethylene bags is far less compared with former containers. And there is no breakage in shipping."

Time and time again, film made of BAKELITE Brand Polyethylene proves highly practical and inexpensive for packaging chemicals and corrosives, either in bag form or as drum and carton liners. Call your packaging supplier for details.

Chemically resistant to practically all acids and alkalies, film produced from BAKELITE Polyethylene by **The Visking Corporation,** Terre Haute, Ind., is of great advantage in packaging Colonial-42 rat and mouse bait. The polyethylene bags are supplied by **Bemis Bro. Bag Co.,** St. Louis 2, Mo.

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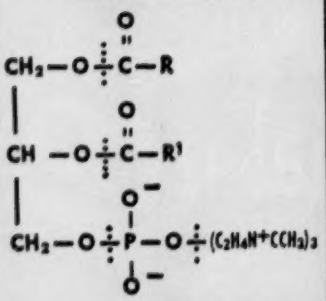

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that "a joint job between producer and converter could also be successful," would help restrain some textile manufacturers from cutting corners in fabric production.

Chemstrand Corp. is also pushing retail education, has a retail service section as part of the merchandising division, maintains a constant flow of of information and aids to dealers. Going further, its representatives work closely with stores everywhere to assist them with problems that arise.

For the bulk of producers, promotion would entail a combination of themes similar to that propounded by Du Pont, a producer whose techniques have developed since early rayon days. Posits Du Pont, producers must:

- Develop fabric blends, know their characteristics.
- Work with mills and converters in developing their own fabrics.
- Join forces with the latter two to orient garment manufacturers and retailers.
- Aim group advertising, publicity and product information services at consumer education.

**Caution Needed:** Caution is the keynote, manufacturers agree, harking back to a pronouncement made at last month's Association of Buying Officers' annual meeting. Said Amerotron Corp.'s Robert Huffines: fiber makers must alert customers to the need for "prudence and caution in stating performance claims to retailers until they are proved for the garment and end-use concerned."

Recognizing this, producers are more and more concentrating on blending possibilities, end-use development, are classifying new fabrics as entities rather than as combinations of separate fiber properties.

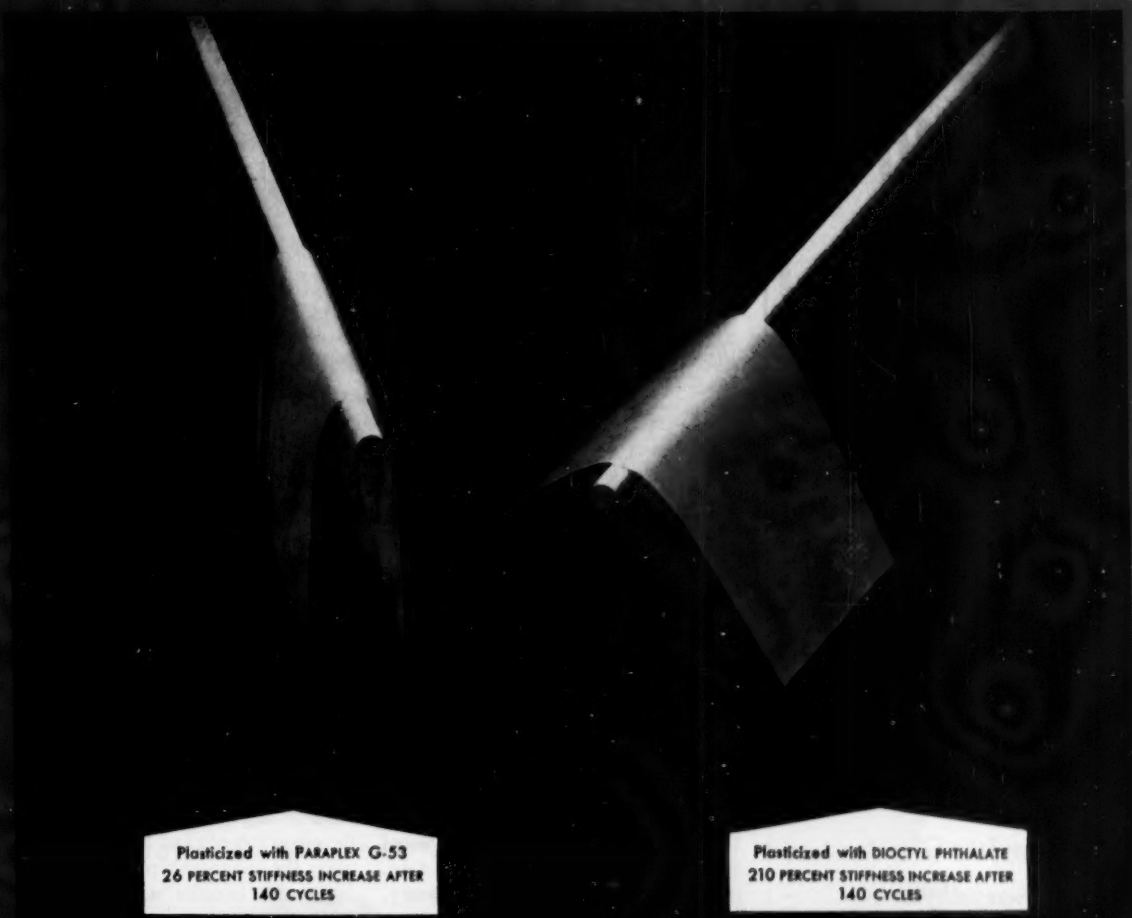
**All-round Program:** As a result, fabric development on the producer level is on the increase, will gain more and more in stature, producers feel. Exemplifying the trend is Celanese, which recently (*CW, Oct. 29, p. 72*) revealed that "the most complete development laboratories ever attached to a textile industry marketing operation" are being established at Charlotte, N. C.

Says Celanese, "The textile industry must get out of the trial-and-error approach and provide basic technology in fiber utilization."

Others on the same tack are American Enka Corp. (New York) and Industrial Rayon Corp. (New York). "The days of just selling are passé," points out American Enka. "We've got to develop and keep developing." Following up, Industrial Rayon has cued its program into developing rayon as a better, more economical substitute where other fibers are now used.

**The Outlook:** General feeling is that few new fibers will enter the field in the next several years. Instead, customers on all levels will see a host of new fabric developments, blending two or more existing fibers. Furthermore, the consensus is that providing the right fiber for the right use will be the job of the producer together with the fabricmaker. Net result: although consumer education will continue in distribution programs, fabricators' judgment and integrity will be the prime factors in marketing satisfactory fabrics.

**TESTING, DEVELOPMENT: At Carbide, quality checks are for the consumer.**




Flexibility after laundering. Both samples formulated to initial equal flexibility.

# Watch out for plasticizers that wash out

Washing vinyl products like baby pants or hospital sheeting in hot, soapy water can be pretty tough on the vinyl plasticizer. Tough on an ordinary plasticizer, that is. PARAPLEX G-53 doesn't mind this kind of treatment. For example, samples of vinyl film containing PARAPLEX G-53 and samples containing dioctyl phthalate were laundered repeatedly in an automatic washer together with family wash. The films plasticized with PARAPLEX G-53 remained soft and supple; the others became hard and rigid.

This ability to stay put under actual washing conditions is just one feature of PARAPLEX G-53 polymeric plasticizer. When you add to that the plasticizer's resistance to extraction by aromatic and aliphatic solvents, you've got quite a combination. And what's more—PARAPLEX G-53 rebels against migration into lacquer, polystyrene, rubber, and baked finishes.

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**COUNTER: As chemical consumers multiply, salesmen draft . . .**

# Blueprints for Selling

**Like the search for the seven cities of gold, the salesman's quest for how-to-do-it knowledge never ends. This week, as some 300 salesmen and sales managers gathered under the vine-covered balconies of New York's Hotel Roosevelt for the Fourth Annual Sales Clinic of the Salesmen's Assn. of the American Chemical Industry, they were still plainly seeking answers to the practicalities of "how-to-make-a-sale."**

In lunch table conversation, in chitchat in the lobby, in questions asked of panel speakers, the need for know-how popped up time and again. But if this need for know-how was emphatically demonstrated, so was the fact that management was becoming aware of the need, offering field-tested procedures.

Accepting the challenge, Robert Gopel, manager of sales personnel development for Koppers Co., convincingly advocated the "planned sales presentation" as the way to bring sales orders back.

The "planned sales presentation," believes Gopel, will give salesmen the know-how that purchasing agents claim they need. It will help salesmen understand their products, make complete presentations, use visuals, prove claims, answer customers, and service them knowledgably. What's more, its Kopper's experience that the method works.

Essential as the first step to the designed sales talk is a written profile of the customer. This includes name of contact and title, names of competitors, type of business, number of previous calls, and the purpose of the call. From this, the plot for sales unfolds through interest-arousal stages to the client's needs and the benefits from using the salesman's products.

It's the benefits a customer gets from the product or company that makes the sale. And, for maximum effect, says Gopel, they should be matched against the needs of the customer, supported by proof—lab data, samples, specifications. Objections, part of the written plan, must be countered by at least two logical answers. Following a summary, the scheme should include a definite request for action—a sale, a lab test, technical service.

By working out such a plan, salesmen can supply themselves with such of the how-to-do-it of making a sale, because the thinking inherent in such planned sales presentations forces salesmen to apply basic principles of salesmanship. It points up the need to know the product when weighing the customer's requirements, focuses attention on what benefits to present, to have a reply to "your competitor's plant is only four miles away."

The clarion call by Gopel for the planned sales presentation may or may not stampede salesmen to the sales-drafting board. But it does suggest that the answer to "How do you sell?" can be found—and by the salesman.

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ADD A TOP CREASE to your sewn-valve Multiwall and you will substantially reduce sifting. Union packaging specialists will show you how this crease controls sifting by improving the closing of the insert.

Field tests have shown that the valve closure on the Multiwall with a top crease is far neater and makes a better appearance than the uncreased bag.

Union offers sewn-valve Multiwalls with top crease at no upcharge . . . another typical example of Union's extra service to its customers.

Ask to see samples of these new bags and a demonstration of what they can contribute to your packaging operation.

**Union's top creased sewn-valve Multiwalls have helped us eliminate sifting**

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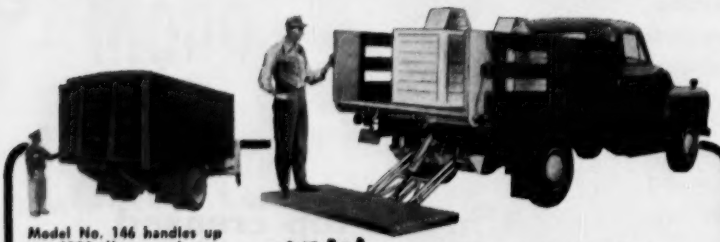

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## New Markets Beckon

**More market coverage means more sales—that's behind the recent expansion moves of two major pharmaceutical companies, Chas. Pfizer & Co., Inc., and Parke, Davis & Co.**

Concentrating on domestic markets, Pfizer opened this week in Portland, Ore., the fifth of its new regional warehouses. Only about two weeks ago, the company cut the tape on a similar building in Dallas situated to serve most of the Southwest.

As Pfizer aims at better national coverage, Parke, Davis is mapping plans for Mediterranean-area sales. In Rome, limited production and packaging of antibiotics, tonics and vitamins is now under way. And company salesmen are stepping up sales activities. An Italian firm, Societa Distribuzione Medicinali s.r.l., will handle warehousing and shipment of Parke, Davis products in Italy.

At present, Parke, Davis strategy calls for distribution to Italy only, with other Mediterranean countries to go onto the sales map later. Africa too, may be added.

To boost servicing of the southern European physician and druggist, Parke, Davis will have a solid promotional campaign. There'll be conventional detailing, sample distribution, and promotion in foreign medical and pharmaceutical journals. Special exhibits for medical conventions staffed with detail men, and medical movies, medical journals, direct mail, and catalogs in several foreign languages

**distribution for drug firms.**

will round out the drive. Back home, in Detroit, the Overseas Division maintains facilities for answering any foreign information request on any product (company made or not) in the language of the request.

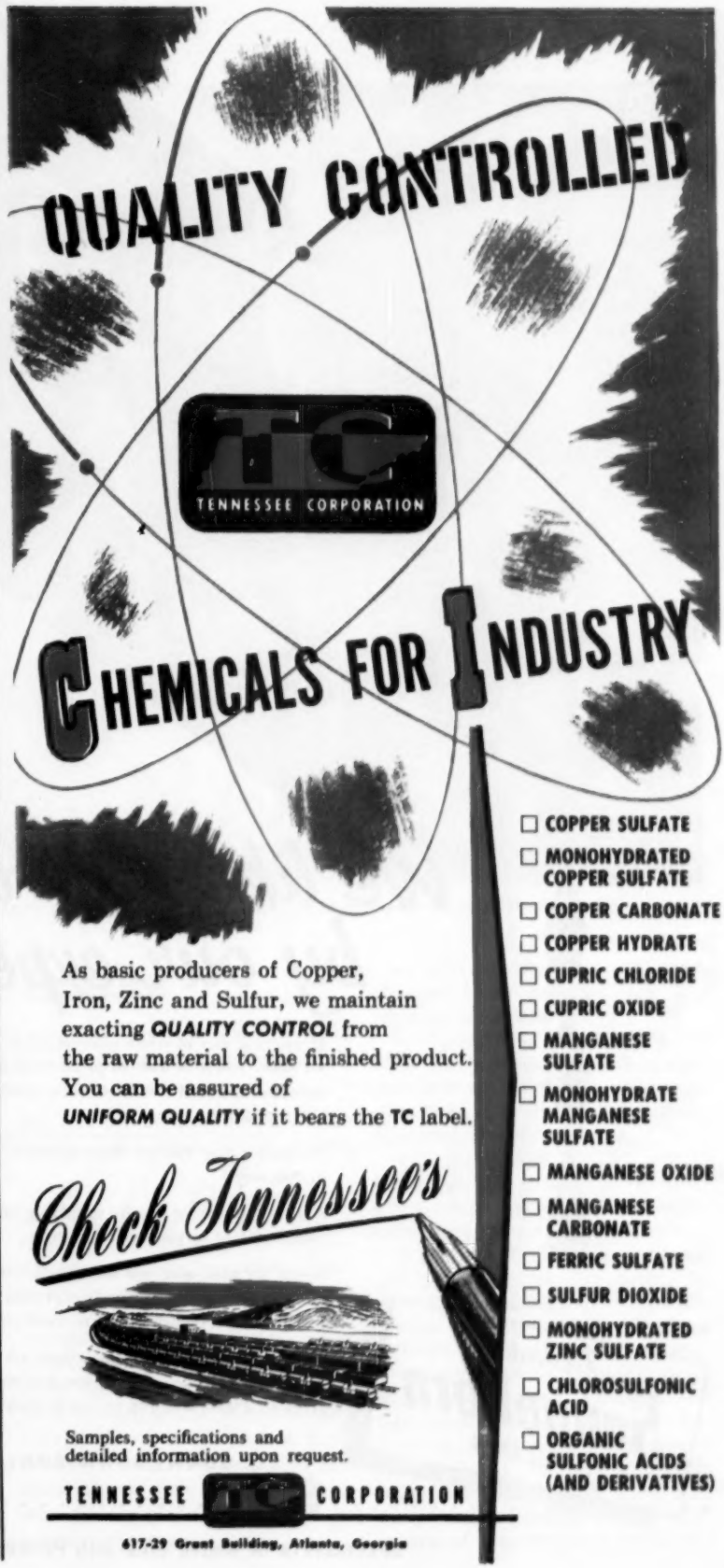
Talking the customer's native tongue is naturally a boon to sales. Moving closer to the market—as Pfizer is attempting to do, with its regional warehouses—and as Parke, Davis is doing in Italy—is popular, too.

•

**Ready for Reference:** Hydroabietyl alcohol—bulletin presents physical and chemical properties of technical grade material. Detailed information on use as tempering agent in alkyd resin formulation, and brief descriptions of applications in adhesives, fixatives, hot-melt coatings, oil additives, wax additives, and surfactants are included. Hercules Powder Co. (Wilmington, Del.).

• Taste and odor controls—76-p. book discusses sources of tastes and odors in water supplies, control by means of activated carbon. Industrial Sales Division, West Virginia Pulp and Paper Co. (New York).

• Fluorocarbon oil, waxes and greases—16-p. bulletin contains descriptions of chemical structures, specifications, and applications as lubricants, hydraulic fluids, potting and sealing waxes, and heat transfer fluids of Kel-F materials. Detailed data on physical properties is included. The M. W. Kellogg Co., Chemical Manufacturing Division (Jersey City, N. J.).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**FACE TO FACE: Red spider mite, greatly enlarged, is a prime agricultural enemy. It's a problem that's . . .**

# Bigger than It Looks

A handful of new miticides are on the way to deal with the tiny pests that have thrived since the introduction of modern insecticides.

There's a market now for $10-15 million/year worth of specific miticides; and much more than that when multi-purpose pesticides are counted in.

**There seems to be a predilection,** in recent fiction, for the fascinating premise that insects could "inherit" the earth. In a recent motion picture, for example, ants as big as railroad cars stalked the West.* Actually, the fictional terrors of fictional scientists are not much worse than the real problems of agricultural scientists. And insect size is certainly not the prime worry. In fact, a vital current problem concerns the microscopic size pests, mites (or acarids).

* *Them*, Warner Brothers, 1954

The mites became a real problem only a few years ago, after the introduction of potent insecticides. These chemicals killed off mite predators, and with a few exceptions, scarcely damaged the mites. Familiar control methods (oil sprays, sulfur, rotenone) weren't able to check the mites alone. Now, though specific miticides have been on the market for half a dozen or more years, development of new chemicals still goes apace. And there are a number of products that may be commercial soon:

- Hercules Powder's AC 528. Hercules hasn't provided the exact chemical description yet.
- Imperial Chemical Industries' R 6199. An insecticide as well as miticide, it is still far from a commercial item. It is O, O'-diethyl S-$\beta$-diethylaminoethyl phosphorothiolate.
- Rohm & Haas' FW 293. R & H is also unwilling to name 293's chemical structure, but the firm is highly encouraged by test results.
- Stauffer's R 1303. Not a chlorinated compound like Sulphenone, the other Stauffer miticide, 1303 is broadly termed a phosphate-type insecticide (effective with pests other than mites).
- Upjohn's Mitox. Outside of veterinary products, and Actidione (for turf diseases), it is Upjohn's first major ag chemical. It is *p*-chlorobenzyl *p*-chlorophenyl sulfide, is already being sold in Europe by Boots Pure Drug Co. Ltd. (Nottingham, England).

None of these, of course, is now sold

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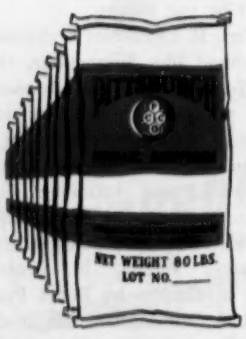


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to U.S. farmers—some may be available in months, some in a year or more—and some perhaps will not get beyond the experiment station. Besides the usual test hurdles, the Miller amendment, with its restrictions on residues, adds concern, may cause delay.

**Market Plum:** The developers of these new compounds are shooting for a substantial market. Although it fluctuates (because of weather, timing of insecticide sprayings, etc.) even more than most pesticide markets, it is conservatively estimated that some $10-15 million worth of specific miticides sell yearly. When compounds like Systox, parathion, sulfur and others are counted where they are applied specifically to kill mites, the market could well be doubled.

Now, the majority of the farmers' mite dollars go for these products:

- Aramite, Naugatuck chemical's miticide introduced half a dozen years ago. Chemically, 2-(*p-tert*-butylphenoxy)-isopropyl 2-chloroethyl sulfite, it is probably the largest-selling acaricide.
- Produced by two firms, Dow and Diamond Alkali, *p*-chlorophenyl *p*-chlorobenzenesulfonate is perhaps the second largest seller. Dow developed the material, which it puts in formulations it tags Ovotran; Diamond calls it K-101 and makes it under license.
- Chlorobenzilate is Geigy's acaricide, offered several years ago under the code name 338. Chemically ethyl 4,4'-dichlorobenzilate, it has proved particularly valuable against the citrus bud mite.
- Dimite is a Sherwin-Williams product, di-*p*-chlorophenyl methyl carbinol, sold in the West by Pennsylvania Salt Co. It is particularly for control of mites on apple trees.
- Sulphenone, *p*-chlorophenyl phenyl sulfone, is Stauffer's miticide aimed also for use in apple orchards. It is made in the firm's Torrance, Calif., plant.

Besides these, a number of other chemicals are effective against mites. This includes EPN 300, Du Pont's product based on ethyl *p*-nitrophenyl-thionobenzenephosphonate; parathion; Systox and Meta Systox.

**Double Shot:** Generally, these miticides are compatible with other insecticides and are often applied at the same time. But in many other cases, where mite infestation has taken an unpredicted upswing, the sprayings can be made a separate operation.

As can be guessed from the long list of crops on which miticide residues have been fixed, mites are an almost universal problem. In volume, however, citrus growers are top consumers of mite control chemicals, probably taking about half. (Florida growers are the largest consumers.) Apple growers are likely next on the list. Cotton has apparently been a disappointing market—only where irrigated cotton is grown is much money spent on acaricides.

**Loss of Punch:** In some areas, there has been talk of miticides' losing some of their effectiveness as the pests become resistant to them. Rose growers, for example, have reported cases where parathion doesn't have the wallop it once had. But generally speaking, excepting some examples of induced resistance among citrus mites, the current miticides are fully effective, Nonetheless, the development of resistance is undoubtedly spurring some of the work aimed toward new acaricides.

And entomologists have not overlooked the bet of fighting mites naturally. Recently, in California, four beetles that prey on mites were introduced to certain citrus areas. It's hoped that these insects, which don't feed on plants, can supplement chemical treatments.

Still, mites remain a problem. Chemical makers aren't ducking the responsibility they have in the situation, and acaricides commercially available or under test indicate that the farmer won't be without effective weapons to meet their mite problems.

## Jelled Glue

**Thixotropy,** a catchword in paint selling, has invaded the adhesives business. Rubber & Asbestos Corp. (Bloomfield, N. J.) is now selling a jel-like epoxy adhesive, Bondmaster M 620.

Because of its thick consistency, the glue doesn't drip nor run, and glue lines (or void fills) up to half an inch in thickness can be made. Further, the product does not shrink on hardening.

The glue is a one-part material, requiring no special addition of hardener. Based on Ciba's Araldite AN-100, it will cure in seven minutes at 535 F, in an hour and a half at 350 F.

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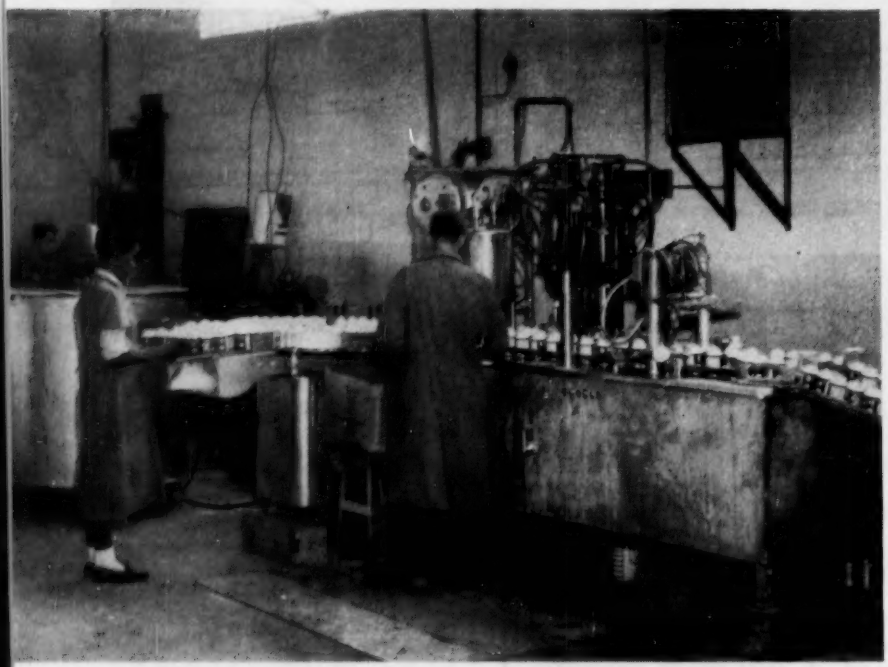

**FILLING AEROSOLS: First of two lines for the new 24,000-sq.-ft. plant.**

# Push Buttons by Push Button

**Last week, Plasti-Kote Co. (Cleveland), aerosol paint packager, moved into a new $300,000, 24,000-sq.-ft. plant specially designed for aerosol packaging. By December, the company will have two almost completely automated product lines capable of turning out 36,000 cans/eight-hour shift.**

This is the latest step taken by Plasti-Kote in its seven-year march with a good idea. A maker of conventionally packaged paint and floor finish since 1939, the company became married to the aerosol in 1948 (a high-fidelity marriage—since then all Plasti-Kote production has been aerosol-packed), when a new-type, two-piece valve was developed that could be removed and cleaned, making it practical for use with paint.

The two have lived happily together: Plasti-Kote now claims about 50% of the aerosol paint market, 2-3% of the total aerosol packaging business (250 million units sold in 1954). Aerosols are beginning to lead the company away from paint—it is also packaging insecticide, plastic spray, Styrofoam color spray, air conditioner and deodorant, under its own label and also under those of other packagers.

**Look, One Hand:** This packaging will now be put on a much more efficient basis. Whereas five separate hand operations are now required before the can is packed, soon, with full automation, only one will be needed.

On the one product line now operating, there is, so far, little more automation than before. The cans move on a conveyor, are filled with product (the flow is electrically timed), then a worker places a seal (containing the valve hole) on the can. A short distance farther along, the cover is automatically crimped to the can. The propellent is forced through the valve hole (again by electrically controlled flow), the valve and cap are put on manually, and the cans are channeled into a hot-water pressure-testing tank. The cans are then taken out of the hot water, cleaned and wiped manually, put through a label-marking machine and packaged into boxes.

**Automatic Marble Shooter:** When new equipment is installed, automation will be more complete. The cans will be cleaned and wiped automatically, and a machine will insert steel marbles in paint cans (where they act as agitators), now a manual operation.

The propellent is supplied from a 100,000-lb. tank (allowing the company to receive propellent in tank-car lots). Approximately three-quarters of the new plant is given over to raw material and product inventory.

Do-it-yourself has been the big impetus, Plasti-Kote officials believe, behind the company's growth so far; but they think industrial applications will be playing a big part in a few

**PACKING: Where there are now five hand operations, soon there will be one.**

# CHEELOX B-14

*The Balanced Organic Sequestering Agent*

Specifically designed to inactivate CALCIUM and MAGNESIUM PLUS all traces of IRON. In alkaline processing liquors, calcium and iron sequestering is accomplished SIMULTANEOUSLY.

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years. It's clear that the company looks for an expanding market: the new plant is estimated to be capable of producing 10 million cans/year compared with the old setup's 3-4 million.

•

**Fill and Shine:** An excess of waxes —at least more than the solvent can take up—goes into a new polish devised by Ralf Trusler for the Davis-Young Soap Co. (Dayton, O.). The new composition (U.S. Pat. 2,715,069) consists of a petroleum solvent in which carnauba and Chinese waxes have been dissolved. About 12-20% more wax than will enter into solution is retained as a suspension, to act as a settling filler for the surface.

•

**Germfree Paper:** Phenylmercuric carboxymethylcellulose, and paper made with it, have been patented (U.S. Pat. 2,719,787) by Jonas Kamlet (Easton, Conn.). The chemical is designed to produce sterile paper and pulp.

•

**Suntan Firm Spreads:** Rolley, Inc. (San Francisco) will soon get a new $70,000 plant—twice the size of the present facility. This is the first move of Botany Mills following its purchase of the suntan lotion, cosmetics and perfumes firm for $2 million. Rolley will continue its present management (President C. A. Rolley will still be head) and merchandising. The new plant, to be retained by President Rolley and leased to Botany Mills, will be in production in February. The added production capacity will permit the addition of two products (not yet announced) to the line.

•

**Dapper Diapers:** Diaper and baby pants are combined in a new disposable baby diaper, which has a coating of polyethylene over soft absorbent nonwoven fabric and fluffed cellulose pulp. The diapers are sold through diaper services and at Sears, Roebuck and Co., at $1.98 for 20, 24 or 36 diapers, (depending on size).

•

**Permanent Patterns:** Durable texture patterns can be imparted to any compressible material such as paper, plastics, leather and textiles with a new process developed by Joseph Bancroft and Sons Co. (Wilmington, Del.), says the company. Treated textiles will bear the trademark Tutored.

## Cutting in on Rugs

**Since Glamorene** hit the market with a *Reader's Digest*-ignited bang in 1952, little has changed in rug and upholstery cleaners. The competitive battle settled down to one between powders, like Glamorene, and shampoos. Now a new element may enter —a product with some characteristics of each, and a few of its own besides.

Lustr-Glo (Lustr-Glo, Inc., Evanston, Ill.) is basically a shampoo, but like the powders (which are mixtures of vegetable or mineral powder with a solvent) it dries to a dust. Unlike the powders, it does not have to be vacuumed immediately. In fact, in some cases, it doesn't have to be vacuumed at all—ordinary traffic will carry it away.

"No" is the big word in the advertising. No mixing, no diluting, no brushing, no vacuuming, no rinsing, nonflammable are the listed selling points. The product is recommended for removal of spots such as grease, oil, paint, nail polish, chewing gum, milk and lipstick.

The mixture is a controlled-foam type of detergent with a mode of action its promotion literature described like this: it wraps itself around the dirt, emulsifies it and kills its stickiness, thus making it ready to be carried off.

**Trial Sample:** Lustr-Glo is being retailed at $1.29/qt. with a trial can included free (if not happy with trial can, return quart for money back) in Illinois, southern Wisconsin, Boston, Florida, Alabama and Georgia; and negotiations are being completed for distribution in six Eastern states. If Eastern sales are satisfactory, the company says, the product will go national.

On the heels of Lustr-Glo will come Lustr-Brite, due to be introduced in January. A liquid silver cleaner applied with a few wipes of a sponge, Lustr-Brite is claimed to dry to a coating that won't tarnish for nine months. Tentatively, this will sell at 98¢/half-pint.

Both products are inventions of refugee chemist Morton Paryzer, a partner in the five-month-old firm (the other partner is John Brennan). Before Lustr-Glo, Paryzer sold to Procter & Gamble a new-type furniture polish (use twice a year), which so far hasn't been marketed.

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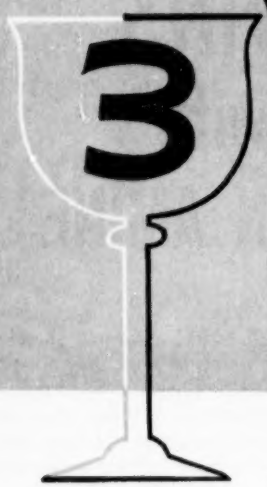

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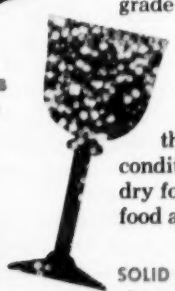

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NAS5-4

# EVERYONE WINS with ROSIN AMINE

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The three companies—a manufacturer of industrial fungicides, a pharmaceutical firm, and a company making chemicals for the petroleum industry—did their "gambling" in the research laboratory. Once convinced that amine derivatives could improve their products they started using them in full commercial production.

Perhaps you have been missing a good bet by not exploring the way in which Rosin Amine D and its derivatives can serve as chemical building blocks in your products. For example, Rosin Amine D forms wax-like salts and resinous amides by reaction with carboxylic acids and reacts with metal salts to form resinous metal complexes.

The amino nitrogen in Rosin Amine D is responsible for surface activity, selective adsorption, and microbiological growth control which can be tailored to obtain desired physical properties. The wide range of properties of the amine derivatives—available in oil-soluble, water-soluble, and acid-soluble types—offers many challenging opportunities to create new products or improve established ones.

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**ROSIN AMINE**

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# Market Newsletter

CHEMICAL WEEK
NOVEMBER 5, 1955

**Trichlorethylene sellers have a supplemental market coming up.** Later this month, Nov. 21, the Chemical Corps will ask for bids on some 440,000 gal. of the solvent.

There's little chance that the extra business will be shrugged off, despite the fact that general demand for trichlor continues to be at fairly satisfactory levels. Supplies are quite adequate to cover industry needs as well as the government requirement.

As far as price is concerned, trade followers report that the recently posted higher 10¾¢/lb. (*CW Market Newsletter, Oct. 1*) appears firm enough to hold through this final '55 quarter and probably well into next year.

**On the other hand, perchlorethylene users may be paying** slightly more for their requirements sometime after the turn of the new year.

Skipped over in last month's price-changing flurry (which boosted other chlorinated solvents), perchlor prices are generally not expected to remain unaltered through the first quarter of '56. Reason: producers are faced with the same higher chlorine costs that pressured carbon tetrachloride and trichlorethylene.

Only reason, say some, that perchlor prices were not revised on Oct. 1 is that they had been advanced ¼¢ to ½¢/lb. just three months earlier.

**No longer subject to speculation are the prices** silicate users will have to contend with next year. Late last week, Philadelphia Quartz (Philadelphia, Pa.) flipped over the calendar pages, announced increases to become effective on Jan. 1, 1956, on several of its crystalline silicates.

Price of anhydrous sodium metasilicate, for example, will be upped to $5.35/cwt. (c.l., bags, f.o.b. works). Other coming quotes: sodium sesquisilicate, $4.80/cwt. (c.l. bags); concentrated sodium orthosilicate, $6.30/cwt., c.l. in fiber drums.

**Are hydrofluoric acid prices going up?** There's some trade talk along that line, but most HF producers insist that the probability of any revision—up or down—is remote. Business is quite active, for the most part, with steel and glass makers continuing to place hefty orders.

In a few areas, though, the near-term outlook for hydrofluoric sales isn't as bright. Demand for the acid may be expected to slide off during the next two months or so, due chiefly to the seasonal dip in propellent and refrigerant outlets. It's a normal fluctuation, however, and no source of great concern to HF sellers.

**More fluosilicic acid for water fluoridation** is on the way. Davison Chemical (division of W. R. Grace) has set up additional production facilities at three plants: Lansing, Mich.; Columbus, O.; Nashville, Tenn. The new installations bring Davison's total capacity for the acid to more than 14,000 tons/year, making possible a threefold increase in the company's sales of the fluoridation chemical.

Optimism for greater use of the acid (which is derived as a coproduct from the company's production of fertilizer superphosphate) is high enough to underwrite concrete plans for further expansions. These will be installed as demand for the fluosilicic increases, says Davison.

## Market Newsletter

(Continued)

**Target: Jan. 1. That's the date** on which Archer-Daniels-Midland hopes to switch into high gear its new fatty alcohols plant at Ashtabula, O. The installation was officially opened in early June, but getting the operation rolling has been slow work. Reason: Some of the products are new to commercial production, which has meant repeated batch making and testing.

When full-scale operations are achieved, ADM will be able to turn out about 20 million lbs./year of alcohol plus some important by-products, such as glycerine and caustic soda.

•

**Fatty acids are up; freight rates are higher:** caustic costs more. That's the triple-pronged plaint of stearate producers, as well as their explanation for newly posted, 5½-11% higher prices on an extended list of metal stearates.

Aluminum stearate takes the greater jump (4¢/lb. in ton lots), will now cost 38¢/lb. Calcium, lead, magnesium, iron, and zinc salts (powdered) will be advanced 2¢/lb.

The changes are industry-wide, and the first since a reduction in Jan. '52. Chances are the hikes will not be much of a sales deterrent; demand for the stearates is holding up well.

Fatty acid sales, incidentally, have also been more than heartening. There's no threat of shortage, of course, but marketers report that there aren't any big surpluses around, either.

•

**The same can be said for copper sulfate.** Fact is, inventories are still on the short side, but consumers can look for faster deliveries as producers gradually whittle a backlog of orders.

The slowdown of shipments to industrial users was engendered by the recent rush of emergency orders for sulfate needed to clarify flood-polluted municipal water systems.

•

**If you're a titanium sponge user,** you'll be able to pocket another 20-25¢/lb. saving. The fourth-in-two-years reduction in Du Pont sponge prices—which will likely become industry-standard—brings the top grade, A-1, down to $3.75/lb.; the A-2 to $3.25. Fine-particle form of titanium is reduced 25¢, will sell at $2.75/lb.

**SELECTED CHEMICAL MARKET PRICE CHANGES**

**Week Ending October 31, 1955**

| | Change | New Price |
|---|---|---|
| **UP** | | |
| Metal stearates, ton lots, lb. | | |
| Aluminum | $ 0.04 | $ 0.38 |
| Calcium | 0.02 | 0.38 |
| Iron | 0.03 | 0.40 |
| Lead | 0.02 | 0.42 |
| Magnesium | 0.02 | 0.41 |
| Zinc | 0.02 | 0.40 |
| **DOWN** | | |
| Blood, dried, high-grade, unground, 16-17% ammonia, bgs., Chicago, unit ton | $ 0.50 | $ 5.50 |
| Thymol, NF, fin fib. drms. | 0.25 | 2.25 |
| Zinc, metal, prime Western slabs, E. St. Louis | 0.005 | 0.13 |

**All prices per pound unless quantity is stated.**

NATURALLY manufacturers take every possible precaution to avoid contamination in making their products. Don't let *your* quality control end there by shipping your product in containers that are not 100% free of scale, grease and dirt. With USS Steel Drums you can maintain product purity right to your customers' door. Here's why:

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Although misuse accounts for some water shortage, virtually all of it is caused by inconsistent or inadequate rainfall. If you're looking for a new plant site, you should consider this important fact:

*While the annual rainfall of the 48 states as a group averages 31-36 inches, that of the six states comprising The Land of Plenty averages 40-45 inches—about 30% more.* Not one of these states is below the national average.

It will pay you to consider this and other advantages to chemical manufacture which you'll find in *The Land of Plenty.* Let the N&W's plant location specialists tell you about them, without obligation and in confidence.

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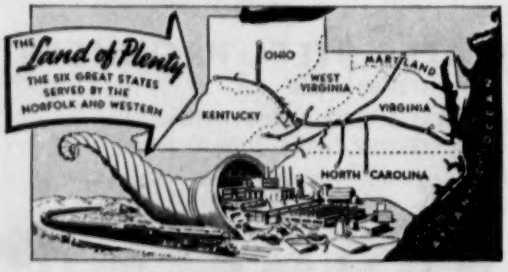
Elizabeth River
Black Water River
Roanoke River
Dan River
Bannister River
Pigg River
Smith River
Mayo River
Potomac River
Shenandoah River
Holston River
Clinch River
New River
Guest River
Bluestone River
Big Sandy River
Ohio River
Little Miami River
Scioto River

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**Norfolk and Western Railway**

HIGH PURITY IN TON LOTS, as makers make ready for . . .

# Big-Time Boron Future

**Few commodities allied with the chemical industry have had as long a germination period between discovery and commercial marketing as has boron.* And, concomitantly, few appear to have a more market-exploding potential.**

Right now, boron makers agree that the market can best be described as "limited," though soon-coming outlets may consume, within the next few years, as much as 2-3 million lbs./year of commercially produced elemental boron.

There are no concrete consumption or production statistics extant but a measure of the industry's optimism over the future can be gleaned from trade estimates pegging today's use of the element, as such, at something less than 5,000 lbs./year.

Further underscoring the upcoming market growth is the current hectic anticipatory bustle among major U.S. boron and boron compound makers.

• Pacific Coast Borax, culminating a 2½-year research program is ready to offer ton lots of a high-purity (95-97%) amorphous boron (as well as a lower 90-92% grade) at industry-shaking prices—the high-purity at $12-15/lb.; the other at $10-13.

• American Potash, with an eye to extensive use in plastics, petroleum, glass and other outlets, is currently pushing development of a raft of organoborons.

• Stauffer will splash into anhydrous boron oxide (anhydrous boric acid) production early next year with a new, approximately 1-million-lb./year plant in San Francisco. The firm also has definite plans to reduce drastically—perhaps by as much as 50%—its prices on boron trichloride. Aim: to develop civilian markets for the material, presently going chiefly to the government, in small amounts.

Likelihood of increasing demand for boron compounds, too, is behind the just-announced Pacific Coast Borax plan to sink some $18 million into construction of new concentrating and refining plants at Boron, Calif. The new facilities, with a productive

* The element was first isolated in 1808.

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Lisle Jeffrey, Industrial Engineer
Missouri Division of Resources & Development
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capacity greater than the company's existing plants at Wilmington, Calif., are expected to be in operation by the middle of 1957.

Sooner than that, probably sometime in early '56, PCB could be turning out respectable quantities of its high-grade elemental boron. Ground is already being broken at the Boron site, and plans include designs for an elemental installation, with an initial capacity of some 2.5 million lbs./year, to augment its pilot-plant production.

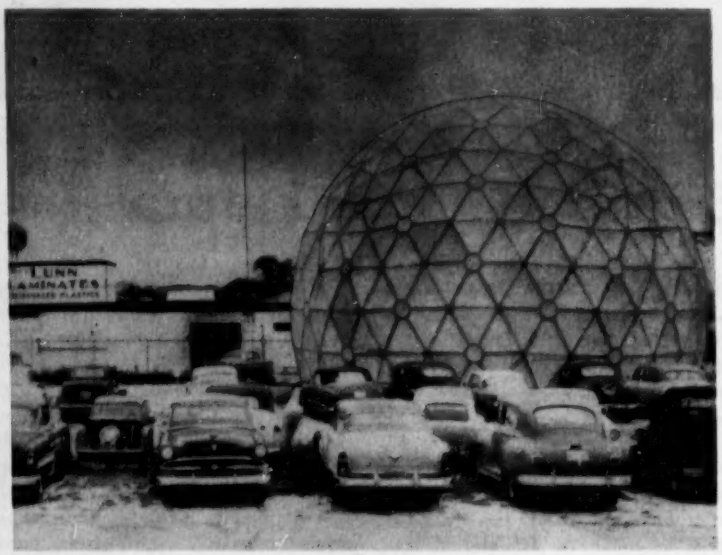
At present, the number of U.S. primary boron producers is small: American Potash, Pacific Coast Borax, Cooper Metallurgical Associates (Cleveland), F. W. Berk (through Berkshire Chemical, New York), and Norton (Worcester, Mass.).

**Three-Way Split:** The boron industry can, like all Gaul, be divided into three parts: elemental boron; boron organics; boron inorganics.

The inorganic borates, somewhat older and more familiar than the organics, are still being promoted for use in a seemingly unending list of outlets. Included are sodium polyborates, as washable, fire-resistant additives to polyvinyl acetate paints, for instance; anhydrous boric acid, now finding use in the manufacture of ferroalloys, abrasive boron carbide, metallic borides for tools and dies, and in various organic and inorganic boron.

Add too, the complex borophosphates (textile flame-proofing), boron hydrides, boron nitrides.

In the boron organics fields, there's much activity by American Potash and Pacific Coast Borax, among others, to push use as dehydrating agents; as synthesis intermediates; as sources of




## Geodesics: Global Outlet

BEAMED TOWARD a variety of uses, polyester resin—glass fiber Geodesic spheres will probably find their first large-scale application in military radar coverings.

Towering four stories high, the six-ton structures are said to withstand 200-mph. winds and extreme temperature changes, may also serve as barracks and other military shelters.

Manufactured by Lunn Laminates, each unit consumes 12,000 lbs. of Barrett's polyester resin for its 363 molded plastic parts, is held together with neoprene gaskets.

Smaller units are proposed for speedy construction of new towns in hot areas such as Arabian oil fields. Advantages: transportable by helicopter, may be speedily erected, have low heat transmission.

*Advertisement*

# CHEMICALS OUTLOOK

November, 1955

**This news bulletin** about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

**CAN YOU PROFIT BY THESE NEWLY DISCOVERED CHARACTERISTICS OF WYANDOTTE'S QUADROL?**

The chemical properties and characteristics of Quadrol,* Wyandotte's new chemical intermediate, suggest applications where other alkanolamines are not effective. Here are some of the more interesting characteristics:

In metal complexes, Quadrol is effective with titanium and copper. Two distinct complexes of $Cu^{++}$ and Quadrol are formed in ratios of 1:1 and 1:2.

In epoxy resin formations, Quadrol appears to complement the curing effectiveness of primary amine curing agents.

Quadrol has a very low order of acute toxicity ($LD_{50}$ - 3.2 g/kg) and irritational characteristics.

Quadrol is slightly hygroscopic and exhibits lower equilibrium values and a narrower humectant range than glycerol or sorbitol.

Quadrol reacts with dibasic acids to give resinous polymers. Ion exchange resins prepared from Quadrol may have great possibilities.

Because of the nitrogen atoms in Quadrol, it offers promise in the preparation of adhesives, particularly for metallic surfaces.

Quadrol (N,N,N',N' — tetrakis (2-hydroxypropyl) ethylenediamine) is a completely new polyol with six chemically reactive centers. A water-white viscous liquid, Quadrol is exceptionally heat stable. It has a boiling point of 225°C. at 5 mm.

As an intermediate, the unique structure and physical properties of Quadrol suggest possible use in the preparation of emulsifying agents, surface-active agents, pharmaceuticals, herbicides, fungicides, insecticides, and plasticizers.

Quadrol is now available in commercial quantities. Write for technical data and samples on your company letterhead.

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*Above: 30,000-bbl. stainless clad tank with carbon steel umbrella roof built to store 83% ammonium nitrate solution at Lion Oil Company's El Dorado, Arkansas, chemical plant.*

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**MARKETS . . . . . .**

boron for catalysts, plasticizers, and adhesion additives for latex paints; as fire retardants, etc.

As mentioned above, elemental boron consumption hopes are high and going higher. This despite the fact that almost all of the currently produced material has a defense use, and chances are much of the anticipated output will, for some time, continue to funnel to military and atomic outlets.

**Pattern for the Future:** Quantitatively pinpointing an end-use pattern for boron is like weaving a rope of sand—it can't be done. Hush-hush government applications are, for the most part, still on an experimental plane, but civilian requirements yet to prove out as big-time boron consumers are many. Boron is a powerful deoxidizer and has a strong affinity for many gases—characteristics that are sponsoring copper metallurgy use.

High heat of combustion (24,850 Btu./lb.) makes boron a potential fuel for special application, while its low thermal conductivity gives it excellent insulating possibilities. Alloyed with aluminum, boron increases the lightweight metal's electrical conductivity.

This latter property opens up perhaps the biggest opportunity for boron growth. For a number of reasons, particularly the high cost of copper, most wire makers are experimenting with substitutes—and aluminum rates high in any evaluation. Some of the country's largest wire users (e.g., Western Electric, General Electric), have hopped on boron to jack up aluminum wire conductivity.

If only a portion of the copper wire made is replaced with aluminum, speculate boron producers, even the more roseate production targets will be too low.

Boron's outstanding neutron-absorbing ability is only one reason it's included in AEC and nonatomic military research programs. The element can be combined with plastic matrices, and such shields may partly replace weighty lead or concrete as protection around reactors where weight is a factor. This may well lead to successful use of atomic reactors in aircraft, and—though still far off—the atomic-powered passenger automobile.

As one market analyst phrases it: "Commercial boron use has been a long time coming, but from here on out consumption may literally skyrocket."

# Could millions of photography fans make a market for a portable dark room sink?

**LOW-COST PRODUCTION OF SUCH AN ITEM IS PRACTICAL WITH REINFORCED PLASTICS!**

The need for a dark room sink is keenly felt by millions of men and women whose hobby is photography. They now lack proper facilities for doing their own printing and developing.

Their problem could be solved by a portable unit which sets up quickly in basement, kitchen or bathroom—and stores out of sight in a closet.

The ideal material for such a sink is at hand. By using fibrous glass, bonded with polyester resins, the sink could be molded in one piece. Its weight would be negligible. Its strength would be great. And its cost could be low.

Rounded corners would assure easy, thorough cleaning. There would be no worries about corrosive chemicals damaging the sink—no rust to contaminate prints.

The use of reinforced plastic materials grows every year. They are already widely applied to sports car bodies, boats, corrugated building panels, modern furniture.

Monsanto supplies the basic ingredients for polyester resins. These include Monsanto *styrene monomer* and *phthalic* and *maleic anhydrides.*

If you would like a glimpse of other possible new uses for reinforced plastics, you are invited to request "A Sketchbook of Profitable Products." Write on your letterhead to Monsanto Chemical Company, Plastics Division, Dept. CW-11, Springfield 2, Mass.

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**features of GATX aluminum tank cars*** *Flued Dome Construction*** • *All-Welded Tank, Jacket and Underframe Corner Posts and Girth Bands Riveted to Underframe* • *Safety Dome Platform (Available)* • *Insulation (Available)* • *One-Piece Longitudinal Bottom Plate* • **All features standard unless otherwise indicated.*

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# Technology
## Newsletter

CHEMICAL WEEK
NOVEMBER 5, 1955

**More and more hydrogen peroxide** is going to be made without the benefit of electricity. Allied Chemical, for instance, is putting the finishing touches on its nonelectrolytic peroxide plant in Syracuse. The firm has been heralding its production with ads in business papers. And, though the switch has not yet been thrown, production is expected to get under way in a matter of weeks.

Columbia-Southern, which only last month decided to build a plant using a process it had piloted for five years (*CW Technology Newsletter, Oct. 15*), will build at Barberton, O. The company is keeping details of the process confidential but does admit that its process can trace the lineage to the German one developed during the war by I. G. Farben's Pfleiderer. It will use cell hydrogen (from its caustic-chlorine operations at the site) to reduce a material of the "anthraquinone type" to the corresponding hydro. That, in turn, is catalytically oxidized to form hydrogen peroxide and the original starting material.

Aspects of the process about which C-S won't talk include the organic starting material, which it will synthesize, the solvent used to dissolve it, the catalyst, and the method of oxidation. The original process—along with most of the patented improvements—calls for the use of oxygen. Columbia-Southern, however, may have an air oxidation up its sleeve.

This, then, makes four companies present or potential producers by the Pfleiderer process (Du Pont, Becco, Allied and C-S), while a fifth (Shell) will be making nonelectrolytic peroxide by oxidizing isopropanol to hydrogen peroxide and acetone (*CW, May 7, p. 72*).

Du Pont has been producing peroxide at its Memphis, Tenn., plant for over two years (*CW, Aug. 15, '53, p. 78*), while Becco slipped quietly on-stream this summer.

**What's behind the interest in nonelectrolytic processes?** The cost of electricity is not, in itself, the overwhelming consideration: It takes 8 kwh. to produce a pound of peroxide. The material is presently selling for over 50¢/lb. (of contained peroxide), so that with a moderately cheap power supply, electricity costs are only a fraction of the total. More important is the fact that elimination of electrical equipment cuts capital costs of a plant dramatically, That, plus the simpler operations, can be expected to slash measurably the costs of peroxide.

•

**The third annual symposium on antibiotics, held this week** in Washington, saw the introduction of these potential contenders for drug sales:

- Streptolydigin—tradenamed Portamycin by Upjohn—an antimicrobial active against Gram-positive bacteria.
- Cathomycin, a Merck product (now under clinical evaluation) said to be particularly effective against staphylococci.
- Thiostrepton, clinically promising in combating cocci that are resistant to penicillin and several other commercial antibiotics; discovered at Squibb Institute for Medical Research.
- Rovamycin, tested at Hopital Beaujon (Clichy, France), reportedly has given highly encouraging results in the treatment of tonsillitis, infectious endocarditis.
- Nepera Chemical's (Yonkers, N.Y.) experimental agent 1968, systemic fungus fighter that is claimed to attack moniliasis, histoplasmosis and sporotrichosis in experimental animals.

•

**All of the above are still in the research stage,** as are three other newcomers that reflect the widespread effort now going into the development of

improved antifungus agents: Eucilin, by Sharp & Dohme (division of Merck), appears to be systemically active when given orally; and amphotericins A and B, Squibb experimentals that are inactive against bacteria but reportedly able to armor mice against ordinarily lethal fungus infections.

•

**Still in antibiotics, but in a somewhat different context,** it appears highly probable that Food & Drug Administration will soon flash the green light on Lederle Laboratories' (division of American Cyanamid) bid to make Aureomycin a new factor in commercial food preservation. Lederle sees the product as the active agent in an aqueous poultry dip intended to retard spoilage (*cf. CW Technology Newsletter, Oct. 29*)

Although no official action has been taken on the company's formal application as of this writing, FDA indicates that approval is now nearly a foregone conclusion. That means that Lederle has apparently succeeded in proving (1) that use of the antibiotic would have positive value, not merely serve as a substitute for good sanitation, (2) that no harmful residues of the treatment would be present in poultry as it is consumed.

Dept. of Agriculture certification appears to be the only thing delaying FDA approval. Assuming no unforeseen complications, FDA should give the nod in 7-10 days after USDA transmits notice of certification.

**Approval of the Lederle application bodes well** for other companies weighing entry into antibiotic preservation of food. Several other applications are moving through the mill but—as one FDA official puts it—"they still have a long way to go."

•

**Ion exclusion is gaining muscles, too.** The only installation of any size outside of Dow is the Lever pilot plant for refining glycerine (*CW, Oct 29, p. 48*). But that uses a column only 1 ft. in diameter. Dow has an 8-ft. column (that contains 300 cu. ft. of resin) in production. And it has a 12-ft. column on the drawing boards.

Dow will not talk about specific applications until it has obtained more complete data. It does say that they are not being used for purifying ethylene glycol (a subject on which it has done considerable work).

•

**At the dinner of the Society of Chemical Industry** last Friday, Union Carbide's Joseph G. Davidson, on receiving the Chemical Industry Medal, conceded that there are some staggering mechanical problems still to be solved before coal hydrogenation can become commercial. However, he says the company may be able to "run up the flag" on the project in a year or so.

The present pilot plant (*CW, May 10, '52, p. 66*) was built to treat 300 tons/day (with the hope that it might take up to 600). Davidson now puts the minimum size for a commercial plant at 1,000 tons/day, and that would involve an investment of between $50 million and $100 million. The optimum size, he says, might well be somewhere around 3,000-6,000 tons/day.

•

**You'll be able to build cement plants in midtown** and still get along with your neighbors. That, at least, is the claim that Allis-Chalmers is making for its new A-C-L cement process, a European import that will make its American debut in a new $7-million plant of Marquette Cement Co. in Milwaukee.

*Experienced*

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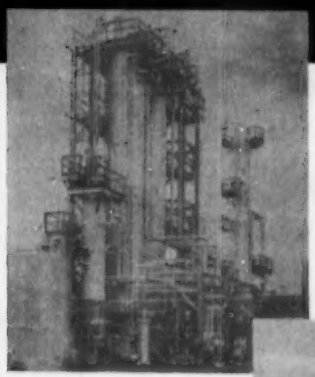

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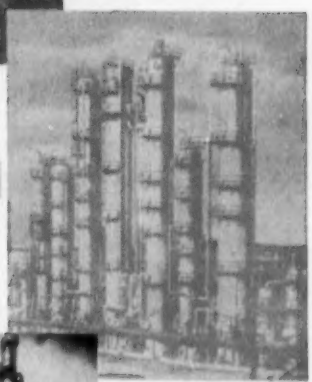

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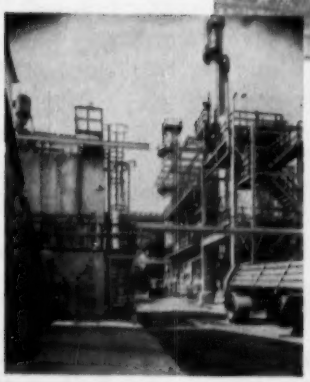

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*The removal of trace impurities from end products is the most critical step in many processing schemes. We have had broad experience with azeotropic and extractive distillation; selective absorption and adsorption; and the many other tools for high degrees of refining.

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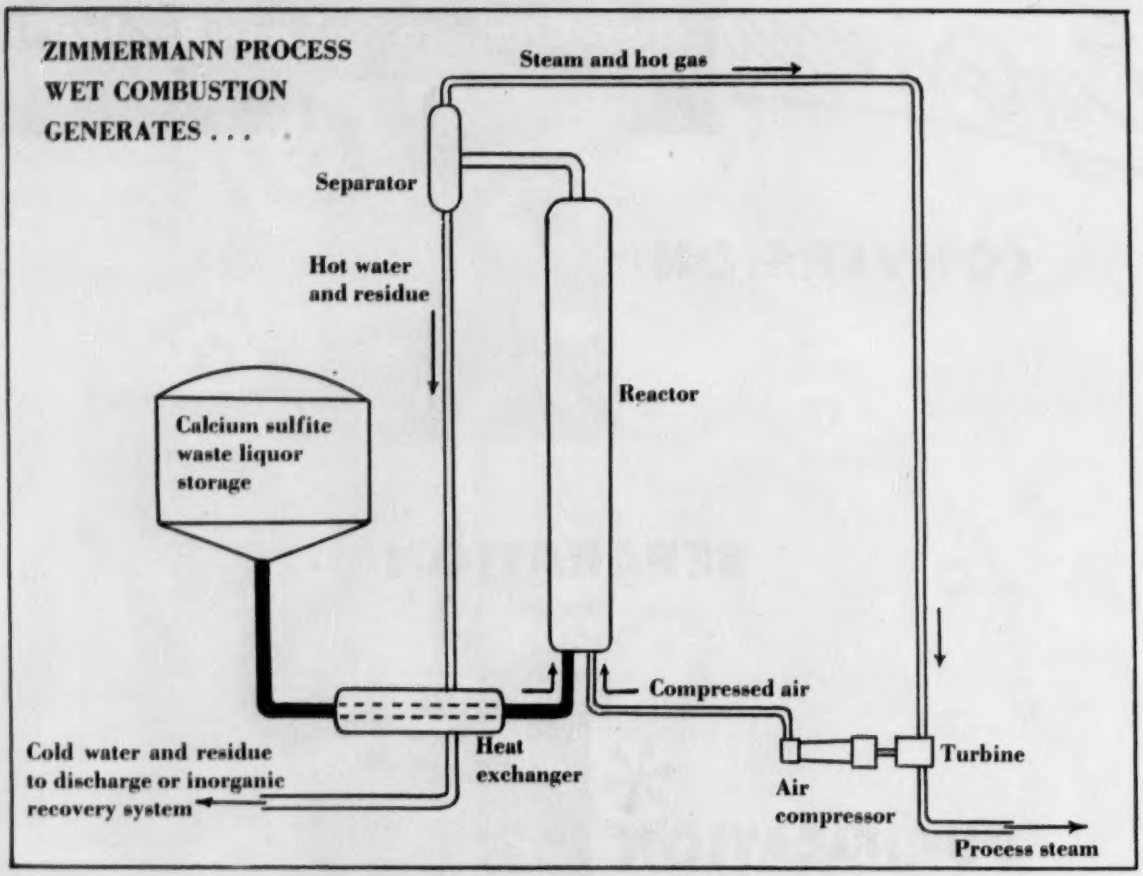


# Process Steam from Pulping Waste

**Pulp producers, hemmed in by ever-tighter pollution restrictions, are eyeing Sterling Drug Co.'s (New York City) new Zimmermann process as a possible remedy for their waste disposal headaches. Aktieselskapet Borregaard has the first commercial installation under construction at Sarpsborg, Norway (CW Technology Newsletter, Oct. 29), Sterling is currently engineering two more for U.S. firms.**

Frederick Zimmermann, who heads up Sterling's production committee, invented the process. Pilot investigations were conducted at Wausau, Wis., where Salvo Chemical Corp. (a Sterling subsidiary) extracts vanillin from waste pulping liquor. It's essentially a method of "burning" organic wastes with compressed air, in a reactor at high temperature and pressure (300 C, 2,200 psi), by wet combustion. And with wastes of high Btu. content, says Sterling, it's an economical means of recovering heat for process use.

The Borregaard installation is going in solely for heat recovery. The 500-ton/day pulp mill has no pullution problems, dumps its waste in a convenient fjord. And the spent calcium sulfite liquor contains no inorganic chemicals worth recovering. But the high cost of process steam (about $1/1,000 lbs.), generated by burning imported oil, makes the waste attractive for its heat value of 6,800 Btu./gal.

Once it's started, the Zimmermann plant will use about 20% of the generated heat to keep itself going. The other 80% will supply 220,000 lbs./hour of 150-psi. saturated steam to the mill. By reducing the consumption of imported fuel oil by 175 ton/day, the $3-million installation is expected to save Borregaard more than $1 million/year.

**Heat Secondary:** By all odds, most U.S. plants will be looking at the Zimmermann process as a means of controlling pollution and recovering valuable inorganic materials, more than as a fuel conservation measure. Hammermill Paper Co. (Erie, Pa.) has been operating Sterling's first commercial pilot plant, finds it satisfactory both for pollution control and for recovery of sodium sulfite and bisulfite. And it's likely that Hammermill will go in for a full-size plant when current plans for expanding its pulping facilities materialize.

But the Zimmermann process won't find the going easy all the way. There are several other commercial processes that are geared, primarily, to recover valuable chemicals, but which are also efficient at destroying organic waste. And, as these competitors are quick to point out, there's only so

much useful heat that can be recovered, regardless of the means employed. It's a matter for dispute as to which process* utilizes the Btu.'s most efficiently.

Most wastes that are burned to recover sodium and sulfur values furnish a portion of the heat required to concentrate the liquor. And some can be disposed of at less expense by concentrating and drying to salable by-products.

**Other Aims:** Though the pulp industry has been, and probably will remain, Sterling's chief target, it's not the only one that's been investigated. Overlooking no bets, the company has piloted wastes from other sources, believes the Zimmermann process could

**INVENTOR ZIMMERMANN seeks to tap fuel potential of pollutants.**

economically handle those from such industries as biological processing, milk, and linoleum. What's more, says Sterling, it may be cheaper than other means of disposing of sewage sludge, even though no surplus heat could be recovered from material so low (about 3,500 Btu./gal.) in organic content.

Interest in the process will undoubtedly vary as much as the numerous economic factors that must be considered. But both Sterling and Borregaard, the exclusive licensing agent in Europe, believe it will be an important addition to their business.

* E.g., R. S. Aries & Associates (New York City) offers the Sulfox process of recovering chemicals from sulfite mills with equipment similar to that used in standard kraft operations; Babcock & Wilcox Co. (New York City) has a new magnesium pulping method; Chicago Bridge & Iron Co. (New York City) has installed Rosenblad evaporators for pulping-liquor concentration at several mills.


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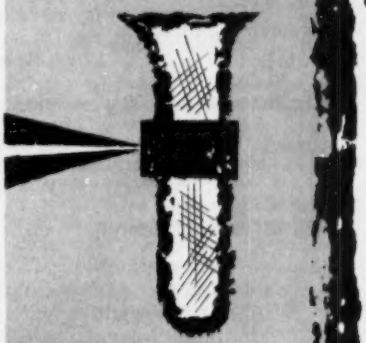

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# How Safety Men See Safety

*Here's what they had to say at the recent National Safety Council meeting in Chicago . . . .*

**On costs of accidents:**

"Accident costs are like icebergs—much of their substance is hidden from view."

**John L. Tormey, acting manager, Roadway Express, Inc.**

**On management's participation in safety:**

"Aggressiveness in safety rarely, if ever, starts with the worker whose life and limb depends on safe performance."

**R. R. Robison, production manager, Shell Oil Co.**

**On off-the-job safety:**

"The accident toll . . . off the job . . . is becoming so large that industry must inevitably accept its share of the responsibility for preventive action. Such action is obviously humanitarian, but it is also sensible and economical."

**Curtis B. Patterson, Employee Relations Dept., Du Pont & Co.**

**On paternalistic aspects of off-the-job safety:**

"In 28 years in industrial relations work, I have yet to know an employee, his wife or family, who objected to anything being done to further personal well-being, provided it was done sincerely."

**A. F. Tyra, head of safety division, Union Carbide and Carbon Corp.**

**On safety indoctrination:**

"The first step in any program of accident prevention is to get employees to think safely."

**W. T. Couch, safety engineer, Couch Motor Lines, Inc.**

"We try to teach them to anticipate hazards, and if we have failed to sell them on a safe practice, then we know we must try again, because we have apparently failed to make ourselves clearly understood."

**A. A. Waugh, safety supervisor, International Minerals and Chemical Corp.**

"We find that when everyone understands how a job is to be performed, there is slight danger of an accident occurring during the course of the job."

**A. J. Willis, district superintendent, Phillips Petroleum Co.**

**On safety guards:**

"An understanding of the basic differences between accident cause and accident source will greatly aid in overcoming this idea that most accidents are caused through human failure."

**Duncan MacDonald, safety engineer, Anaconda Co.**

**On the attitude toward hazards:**

"If we are to work safely, we must recognize the materials and equipment with which we work for what they are and handle them accordingly. We are not to be afraid of them . . . However, it is necessary to respect them."

**Homer Young, supervisor, bleached pulp mill, West Virginia Pulp and Paper Co.**

**On atomic hazards:**

"Basically, we must learn to live with the atom while we use it and keep it from harming us, just as we learned to live with fire."

**Bernard Manowitz, Brookhaven National Laboratory.**

## Safe on All Sides

**The safety engineers who swarmed into Chicago last fortnight for the National Safety Council's National Safety Congress and Exposition tried their best to live up to the motto: Be your brother's keeper, stop accidents. They swapped ideas on every conceivable aspect of the problems of keeping workers safe.**

It's getting popular to cite the improved records in safety, and the chemical industry is no exception. The men charged with safety in the plants, however, realize that there's a tremendous amount of work still to be done.

For instance, as far as frequency and severity of industrial accidents are concerned, the chemical industry has been showing steady, solid progress. But Miles Woodworth, flammable liquids engineer for the National Fire Protection Assn., cited figures to prove that last year the chemical industry had one of its most disastrous years as regards fire. Studies by the NFPA of large-loss fires show that there were 75 fires last year, in which the loss totaled over $250,000. The average loss for the 10 chemical plants included was $791,350, compared with $434,323 for the remaining 65. Said he: "With the single exception of the rubber industry, the chemical industry had more large-loss fires per number of plants than any other industry. The average loss per fire was the largest for any industry."

What's more, as he pointed out, there were other large-loss fires (over $250,000) in plants (over and above those 10) that might normally be regarded as chemical: a varnish plant, two plastics plants, a tung oil plant. Also, two chemical warehouses suffered fires that resulted in a loss of over $250,000.

At the same time, Woodworth admitted that the nature of the processes was hazardous and that the relatively high value of material and equipment in chemical plants helps account for the high monetary loss. "We must recognize," he said, "that many of the major chemical companies have outstanding fire prevention programs."

**On Guards:** Another highpoint of the congress was a talk by Duncan Mac Donald, safety engineer for Anaconda, who spoke of the need for building guards around machinery. He pointed out that machines are the


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***Philadelphia Sales Agency seeking new accounts.*** Broad experience. Good contacts. SA-8101, Chemical Week.

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source of 10% of the injuries that result in fatalities or permanent total disability and 25% of the injuries that result in permanent partial disabilities. Good, effective guards could eliminate these accidents.

Robert M. Farrier, senior surgeon, U. S. Public Health Service, spoke on carbon tetrachloride. He pointed out that as the chemical comes close to being the ideal grease solvent: it's able to remove oil or grease completely, evaporates completely and leaves no residue, and is cheap. In fact, its toxicity is just about its only drawback.

And that—its toxicity—is something that's often underrated. Said Farrier, speaking to the marine section: "Actually, it takes only one-fourth of a teaspoonful of carbon tetrachloride, vaporized in a space 10x 10x10 ft, to give a concentration of 25 parts per million; this is the maximum safe concentration to which a man can be continuously exposed."

Frank Martinek, chairman of the plant protection committee of the Chicago Civil Defense Corps and assistant vice-president of Standard Oil (Indiana), warned of the dangers of overlooking the security aspects of a program. "The U. S.," he said, "is only half safe unless we have a planned security program every bit as good as our safety programs . . . self-preservation can only keep us half safe."

Also at the meeting were sessions on off-the-job accident prevention, handling and recognition of hazardous chemicals, and the need for "selling safety" in employee indoctrination.

The congress is the big event of the year for men whose primary interest is safety. And Donald Brady, safety technician for Dow, covered a lot of ground when he said: "In all honesty, many of our present axioms were formulated after adverse experiences." At such meetings, safety engineers all benefit from their collective "adverse experiences."


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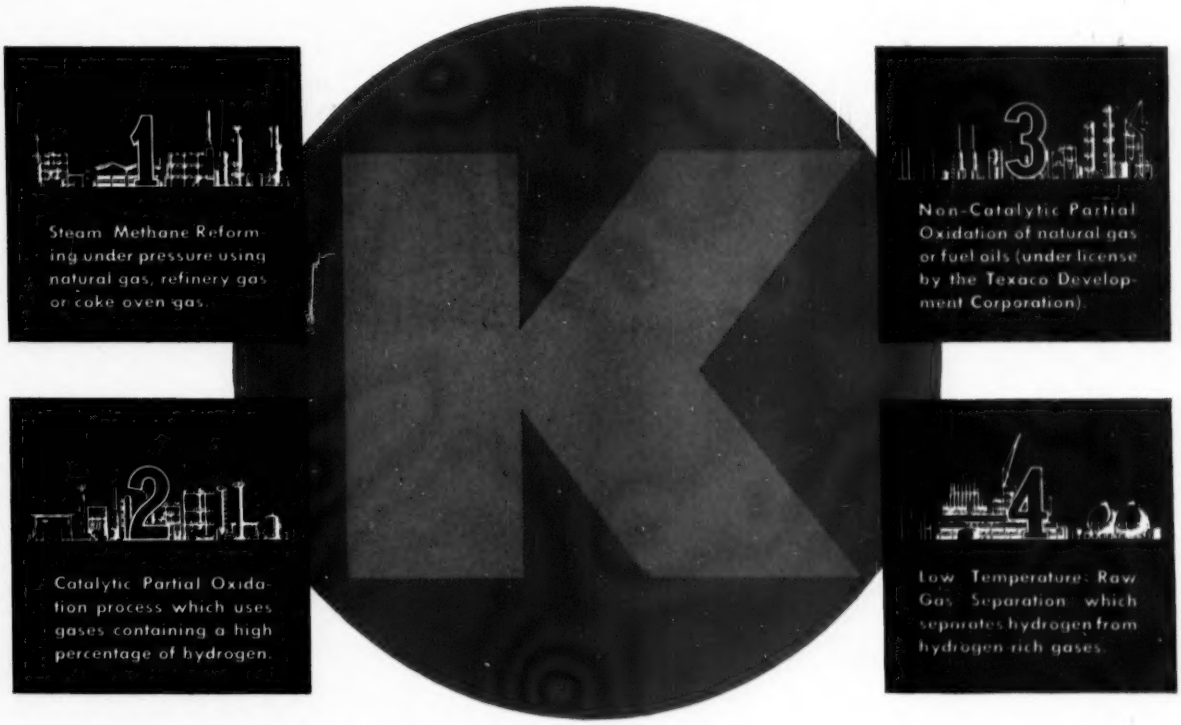
1
Steam Methane Reforming under pressure using natural gas, refinery gas or coke oven gas.
2
Catalytic Partial Oxidation process which uses gases containing a high percentage of hydrogen.
3
Non-Catalytic Partial Oxidation of natural gas or fuel oils (under license by the Texaco Development Corporation).
4
Low Temperature Raw Gas Separation which separates hydrogen from hydrogen rich gases.

## Each Designed for Optimum Efficiency at Different Type Locations

The M. W. Kellogg Company offers four different processes, outlined above, for the generation and purification of ammonia synthesis gas. The conversion phase in all uses the Kellogg-developed, quench-type reactor. With these four basic plant types, potential ammonia producers can be sure of a design which gives optimum results under practically any local operating conditions, including power and fuel as well as feed materials.

This flexibility in ammonia plant design is the result of M. W. Kellogg's many years of successful experience in engineering petroleum refineries and petrochemical plants for major producers both in the United States and abroad. For chemical manufacturers and refiners contemplating product improvement or diversification, it is a guarantee of low initial plant cost, high productive yield, and minimum operational costs.

Details of M. W. Kellogg's four basic types of ammonia plants are contained in a recent 12-page booklet, available on request.

**PETROCHEMICAL PROCESSES AND PLANTS**

**CHEMICAL PROCESS DIVISION**

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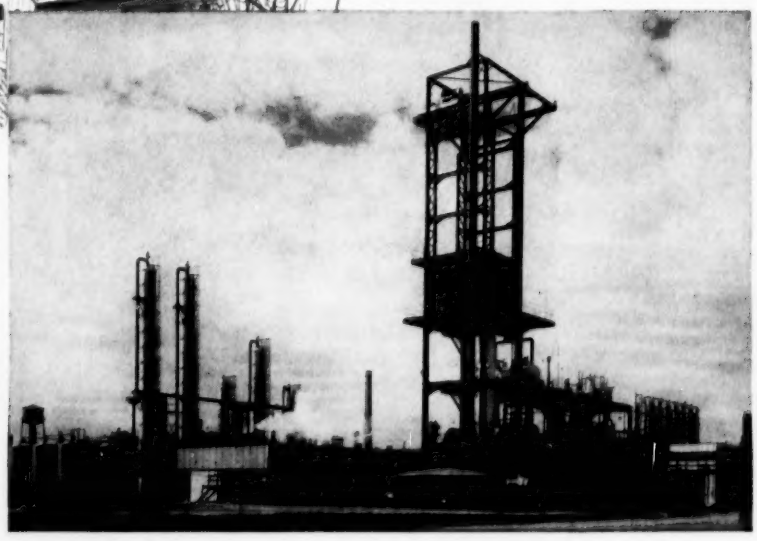

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